


STATE OF UTAH
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF OIL, GAS AND MINING

FORM 3

AMENDED REPORT ☐

APPLICATION FOR PERMIT TO DRILL						1. WELL NAME and NUMBER Cahal 4-15C4					
2. TYPE OF WORK DRILL NEW WELL <input checked="" type="checkbox"/> REENTER P&A WELL <input type="checkbox"/> DEEPEN WELL <input type="checkbox"/>						3. FIELD OR WILDCAT ALTAMONT					
4. TYPE OF WELL Oil Well Coalbed Methane Well: NO						5. UNIT or COMMUNITIZATION AGREEMENT NAME					
6. NAME OF OPERATOR EP ENERGY E&P COMPANY, L.P.						7. OPERATOR PHONE 713 997-5038					
8. ADDRESS OF OPERATOR 1001 Louisiana, Houston, TX, 77002						9. OPERATOR E-MAIL maria.gomez@epenergy.com					
10. MINERAL LEASE NUMBER (FEDERAL, INDIAN, OR STATE) Fee			11. MINERAL OWNERSHIP FEDERAL <input type="checkbox"/> INDIAN <input type="checkbox"/> STATE <input type="checkbox"/> FEE <input checked="" type="checkbox"/>			12. SURFACE OWNERSHIP FEDERAL <input type="checkbox"/> INDIAN <input type="checkbox"/> STATE <input type="checkbox"/> FEE <input checked="" type="checkbox"/>					
13. NAME OF SURFACE OWNER (if box 12 = 'fee') John M. Cahal						14. SURFACE OWNER PHONE (if box 12 = 'fee') 602-369-0839					
15. ADDRESS OF SURFACE OWNER (if box 12 = 'fee') 3127 North 17th Avenue, Phoenix, AZ 85015						16. SURFACE OWNER E-MAIL (if box 12 = 'fee')					
17. INDIAN ALLOTTEE OR TRIBE NAME (if box 12 = 'INDIAN')			18. INTEND TO COMMINGLE PRODUCTION FROM MULTIPLE FORMATIONS YES <input type="checkbox"/> (Submit Commingling Application) NO <input checked="" type="checkbox"/>			19. SLANT VERTICAL <input checked="" type="checkbox"/> DIRECTIONAL <input type="checkbox"/> HORIZONTAL <input type="checkbox"/>					
20. LOCATION OF WELL		FOOTAGES		QTR-QTR	SECTION	TOWNSHIP		RANGE		MERIDIAN	
LOCATION AT SURFACE		1800 FNL 1075 FWL		SWNW	15	3.0 S		4.0 W		U	
Top of Uppermost Producing Zone		1800 FNL 1075 FWL		SWNW	15	3.0 S		4.0 W		U	
At Total Depth		1800 FNL 1075 FWL		SWNW	15	3.0 S		4.0 W		U	
21. COUNTY DUCESNE				22. DISTANCE TO NEAREST LEASE LINE (Feet) 1075		23. NUMBER OF ACRES IN DRILLING UNIT 80					
				25. DISTANCE TO NEAREST WELL IN SAME POOL (Applied For Drilling or Completed) 2000		26. PROPOSED DEPTH MD: 12300 TVD: 12300					
27. ELEVATION - GROUND LEVEL 5974				28. BOND NUMBER 400JU0708		29. SOURCE OF DRILLING WATER / WATER RIGHTS APPROVAL NUMBER IF APPLICABLE Duchesne City					
Hole, Casing, and Cement Information											
String	Hole Size	Casing Size	Length	Weight	Grade & Thread	Max Mud Wt.	Cement	Sacks	Yield	Weight	
Surf	12.25	9.625	0 - 2000	40.0	N-80 LT&C	0.0	Type V	412	2.36	12.0	
							Class G	195	1.3	14.3	
I1	8.75	7	0 - 9200	29.0	HCP-110 LT&C	10.4	Class G	557	2.32	12.0	
							Class G	292	1.64	13.0	
L1	6.125	5	9000 - 12300	18.0	HCP-110 LT&C	12.4	Class G	196	14.2	1.52	
ATTACHMENTS											
VERIFY THE FOLLOWING ARE ATTACHED IN ACCORDANCE WITH THE UTAH OIL AND GAS CONSERVATION GENERAL RULES											
<input checked="" type="checkbox"/> WELL PLAT OR MAP PREPARED BY LICENSED SURVEYOR OR ENGINEER						<input checked="" type="checkbox"/> COMPLETE DRILLING PLAN					
<input checked="" type="checkbox"/> AFFIDAVIT OF STATUS OF SURFACE OWNER AGREEMENT (IF FEE SURFACE)						<input type="checkbox"/> FORM 5. IF OPERATOR IS OTHER THAN THE LEASE OWNER					
<input type="checkbox"/> DIRECTIONAL SURVEY PLAN (IF DIRECTIONALLY OR HORIZONTALLY DRILLED)						<input checked="" type="checkbox"/> TOPOGRAPHICAL MAP					
NAME Maria S. Gomez				TITLE Principal Regulatory Analyst				PHONE 713 997-5038			
SIGNATURE				DATE 03/12/2015				EMAIL maria.gomez@epenergy.com			
API NUMBER ASSIGNED 43013532770000				APPROVAL  Permit Manager							

RECEIVED: April 09, 2015

**Cahal 4-15C4
Sec. 15, T3S, R4W
DUCHESNE COUNTY, UT**

EP ENERGY E&P COMPANY, L.P.

DRILLING PROGRAM

1. Estimated Tops of Important Geologic Markers

<u>Formation</u>	<u>Depth</u>
Green River (GRRV)	4,191' TVD
Green River (GRTN1)	5,051' TVD
Mahogany Bench	6,001' TVD
L. Green River	7,291' TVD
Wasatch	9,131' TVD
T.D. (Permit)	12,300' TVD

2. Estimated Depths of Anticipated Water, Oil, Gas or Mineral Formations:

<u>Substance</u>	<u>Formation</u>	<u>Depth</u>
	Green River (GRRV)	4,191' MD / TVD
	Green River (GRTN1)	5,051' MD / TVD
	Mahogany Bench	6,001' MD / TVD
Oil	L. Green River	7,291' MD / TVD
Oil	Wasatch	9,131' MD / TVD

3. Pressure Control Equipment: (Schematic Attached)

A Diverter Stack on structural pipe from 40' MD/TVD to 2,000' MD/TVD. A 10M BOP stack w/ rotating head, spacer spool, 5M annular, flex rams, blind rams & single w/ flex rams used from 2,000' MD/TVD to 9,200' MD/TVD. A 10M BOP stack w/ rotating head, spacer spool, 5M annular, flex rams, blind rams & single w/ flex rams from 9,200' MD/TVD to TD (12,300' MD /TVD).

The BOPE and related equipment will meet the requirements of the 5M and 10M system.

We have pre-set numerous wells around the proposed location and had no issues.

There are 6 water wells within 10,000' of the proposed location.

There are 0 SWD wells within 3.0 miles of the proposed location.

We successfully drilled the Moon 3-15C4, Ayers Trust 2-15C4 and Epley 1-15C4 in 2013/2014 with no issues (all of those wells are in the same section of the proposed location). We had a 10M stack with a 5M annular on all of those wells.

OPERATORS MINIMUM SPECIFICATIONS FOR BOPE:

The surface casing will be equipped with a flanged casing head of 5M psi working pressure. An 11" 5M x 11" 10M spool, 11" x 10M psi BOP and 5M psi annular will be nipped up on the surface casing and tested to 250 psi low test / 3,000 psi high test for 10 minutes each prior to drilling out. The surface casing will be tested to 1,000 psi. for 30 mins. Intermediate casing will be tested to the greater of 1,500 psi or 0.22 psi/ft. The choke manifold equipment, upper Kelly cock and floor safety valves will be tested to 5M psi. The annular preventer will be tested to 250 psi low test / 4,000 psi high test. The 10M BOP will be installed with rotating head, spacer spool, 5M annular, flex rams, blind rams & single w/ flex rams from surface shoe to TD. The BOPE will be hydraulically operated.

In addition, the BOP equipment will be tested after running intermediate casing, after any repairs to the equipment and at least once every 30 days. Pipe and blind rams will be activated on each trip, annular preventer will be activated weekly and weekly BOP drills will be held with each crew.

Statement on Accumulator System and Location of Hydraulic Controls:

Precision 406 is expected to be used to drill the proposed well. Operations will commence after approval of this application. Manual and/or hydraulic controls will be in compliance with 5M and 10M psi systems.

Auxiliary Equipment:

- A) Pason Gas Monitoring 2,000' - TD
- B) Mud logger with gas monitor – 2,000' to TD (12,300' MD/TVD)
- C) Choke manifold with one manual and one hydraulic operated choke
- D) Full opening floor valve with drill pipe thread
- E) Upper and lower Kelly cock
- F) Shaker, de-sander and centrifuge

4. Proposed Casing & Cementing Program:

Please refer to the attached Wellbore Diagram.

All casing will meet or exceed the following design safety factors:

- Burst = 1.00
- Collapse = 1.125
- Tension = 1.2 (including 100k# overpull)

Cement design calculations for intermediate and production hole will be based on minimum 10% excess over gauge hole volumes. Actual volumes pumped will be a minimum of 10% excess over caliper volume to designed tops of cement for any section logged. A minimum of 50% excess over gauge volume will be pumped on surface casing.

5. Drilling Fluids Program:

Proposed Mud Program:

Interval	Type	Mud Weight
Surface	Air	Air
Intermediate	WBM	9.3 – 10.4
Production	WBM	11.0 – 12.4

Anticipated mud weights are based on actual offset well bottom-hole pressure data. Mud weights utilized may be somewhat higher to allow for trip margin and to provide hole stability for running logs and casing.

Visual mud monitoring equipment will be utilized.

6. Evaluation Program:

Logs:

Mud Log: 2,000' MD/TVD – TD (12,300' MD/TVD)

Open Hole Logs: Gamma Ray, Neutron-Density, Resistivity, Sonic, from surface casing shoe to TD.

7. Abnormal Conditions:

Maximum anticipated bottomhole pressure calculated at 12,300' TVD equals approximately 7,931 psi. This is calculated based on a 0.6448 psi/ft gradient (12.4 ppg mud density at TD).

Maximum anticipated surface pressure equals approximately 5,225 psi (bottomhole pressure minus the pressure of a partially evacuated hole calculated at 0.22 psi/ft).

Maximum anticipated surface pressure based on frac gradient at 7" casing shoe is 0.8 psi/ft at 9,200' TVD = 7,360 psi

BOPE and casing design will be based on the lesser of the two MASPs which is 5,225 psi.

8. OPERATOR REQUESTS THAT THE PROPOSED WELL BE PLACED ON CONFIDENTIAL STATUS.

MECHANICAL

DRILLING PROGRAM

CASING PROGRAM	SIZE	INTERVAL		WT.	GR.	CPLG.	BURST	COLLAPSE	TENSION
SURFACE	9-5/8"	0	2000	40.00	N-80	LTC	5,750	3,090	737
INTERMEDIATE	7"	0	9200	29.00	HCP-110	LTC	11,220	9,750	797
PRODUCTION LINER	5"	9000	12300	18.00	HCP-110	STL	13,940	15,450	341

CEMENT PROGRAM		FT. OF FILL	DESCRIPTION	SACKS	EXCESS	WEIGHT	YIELD
SURFACE	Lead	1,500	EXTENDACEM SYSTEM: Type V Cement + 2% Cal-Seal + 0.35% Versaset + 0.3% D-Air 5000 + 6% Salt + 2% Econolite + 0.125 Poly-E-Flake	412	100%	12.0 ppg	2.36
	Tail	500	HALCEM SYSTEM: Class G Cement + 3 lbm/sk Silicalite Compacted + 1% Salt + 0.3% Econolite + 0.25 lbm/sk Poly-E-Flake + 0.25 lbm/sk Kwik Seal + 0.3% D-AIR 5000	195	50%	14.3 ppg	1.30
INTERMEDIATE	Lead	6,800	EXTENDACEM SYSTEM: Class G Cement + 10% Bentonite + 0.1% SA-1015 + 0.2% Econolite + 0.2% Halad-322 + 3 lbm/sk Silicalite Compacted + 1 lbm/sk Granulite TR 1/4 + 0.25 lbm/sk Poly-E-Flake + 5 lbm/sk Kol-Seal + 1% HR-5	557	35%	12.0 ppg	2.32
	Tail	2,400	EXPANDACEM SYSTEM: Class G Cement + 4% Bentonite + 0.25 Poly-E-Flake + 0.1% Halad-413 + 5 lb/sk Silicalite Compacted + 0.15% SA-1015 + 0.3% HR-5	292	30%	13.0 ppg	1.64
PRODUCTION LINER		3,300	EXTENDACEM SYSTEM: Class G Cement + 0.2% Super CBL + 0.3% Halad 344 + 0.3% Halad 413 + 5 lb/sk Silicalite + 20% SSA-1 + 2% Bentonite + 0.7% HR-5	196	30%	14.2 ppg	1.52

FLOAT EQUIPMENT & CENTRALIZERS	
SURFACE	PDC drillable guide shoe, 1 joint casing, PDC drillable float collar. Thread lock all float equipment. Install bow spring centralizers on the bottom 3 joints of casing & every 3rd joint thereafter.
INTERMEDIATE	Halliburton's PDC drillable 10M,P-110 float shoe, 1 joint, PDC drillable 10M, P-110 float collar. Thread lock all float equipment. Maker joint at +/- 7,250'.
LINER	Float shoe, 1 joint, float collar, 1 joint, landing collar. Thread lock all FE. Maker joints every 1000'.

PROJECT ENGINEER(S): Brad MacAfee 713-997-6383

MANAGER: Bob Dodd

EP ENERGY E&P COMPANY, L.P.
CAHAL 4-15C4
SECTION 15, T3S, R4W, U.S.B.&M.

PROCEED NORTH ON PAVED STATE HIGHWAY 87 FROM THE INTERSECTION OF HIGHWAY 87 WITH U.S. HIGHWAY 40 IN DUCHESNE, UTAH APPROXIMATELY 4.55 MILES TO AN INTERSECTION;

TURN RIGHT AND TRAVEL EAST AND THEN SOUTHERLY ON GRAVEL ROAD 2.95 MILES TO THE BEGINNING OF THE PROPOSED ACCESS ROAD;

TURN RIGHT AND FOLLOW ROAD FLAGS SOUTHERLY, EASTERLY, SOUTHERLY, AND THEN EASTERLY 0.49 MILES TO THE PROPOSED LOCATION.

TOTAL DISTANCE FROM DUCHESNE, UTAH TO THE PROPOSED WELL LOCATION IS APPROXIMATELY 7.99 MILES.

EP ENERGY E&P COMPANY, L.P.

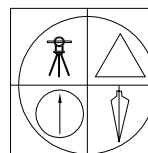
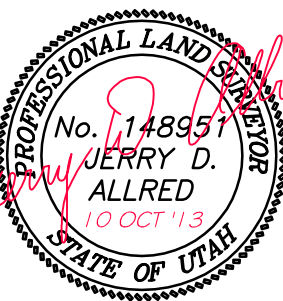
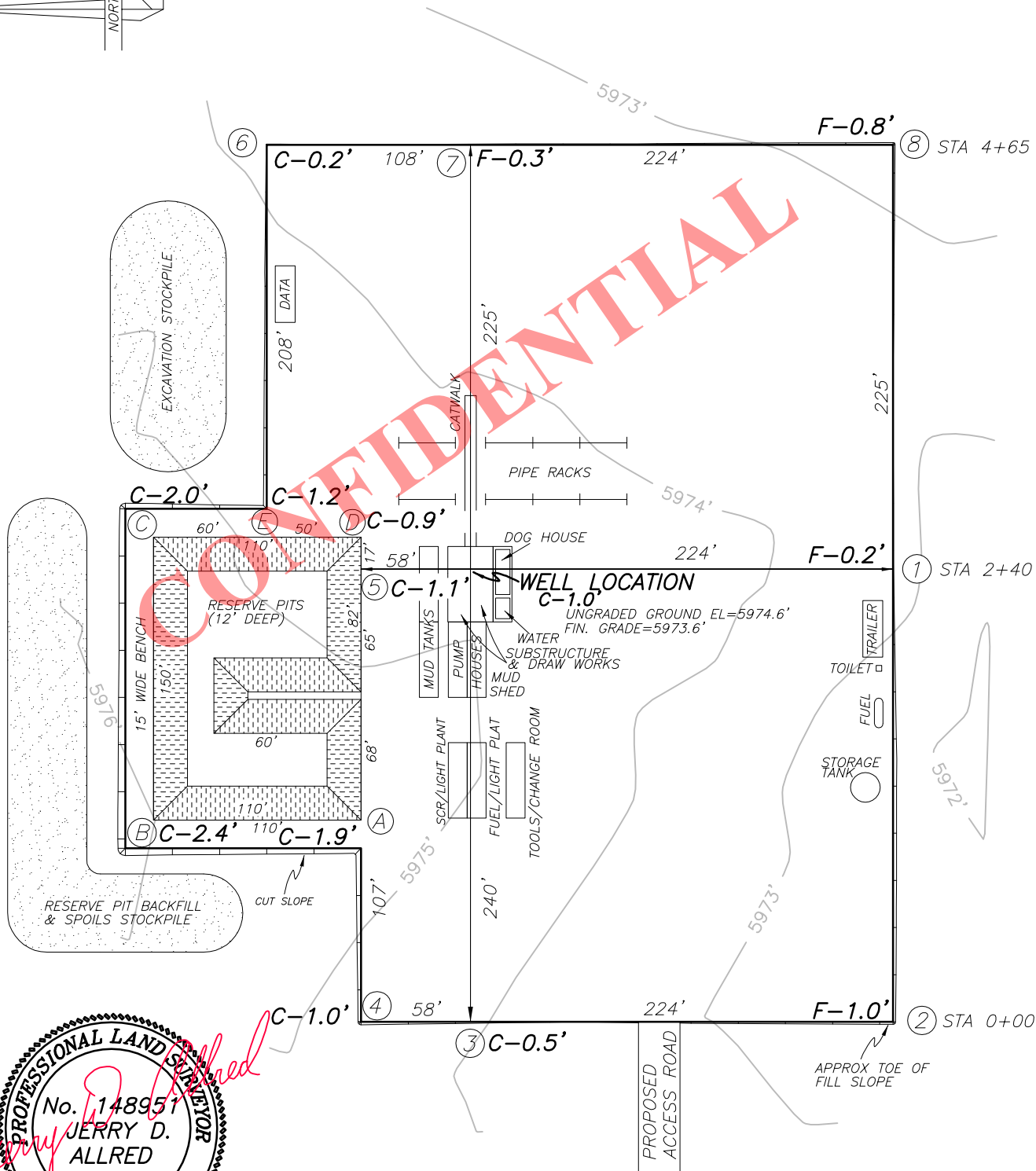
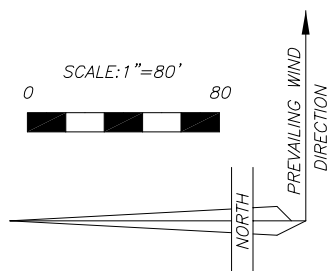
LOCATION LAYOUT FOR

CAHAL 4-15C4

SECTION 15, T3S, R4W, U.S.B.&M.

1800' FNL, 1075' FWL

FIGURE #1


JERRY D. ALLRED & ASSOCIATES
 SURVEYING CONSULTANTS

 1235 NORTH 700 EAST--P.O. BOX 975
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 (435) 738-5352

10 OCT 2013

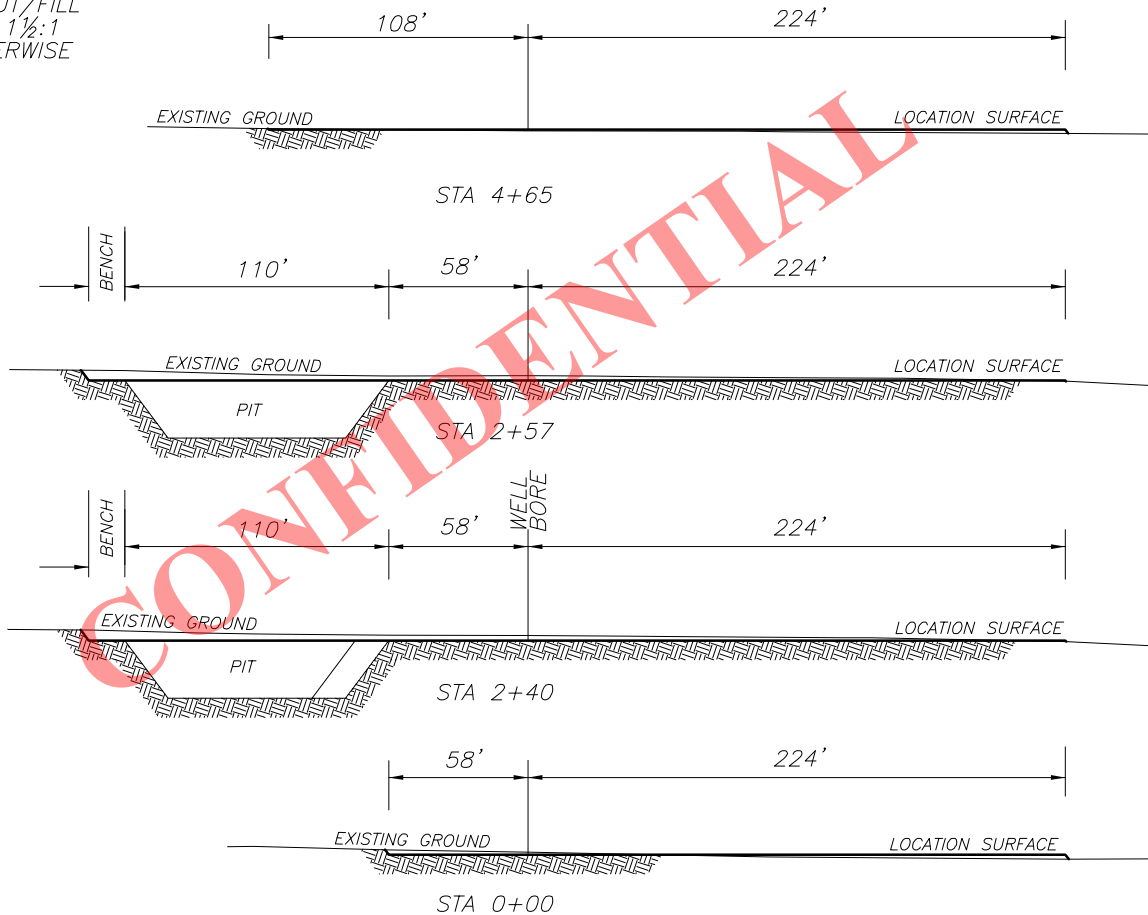
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EP ENERGY E&P COMPANY, L.P.**LOCATION LAYOUT FOR****CAHAL 4-15C4****SECTION 15, T3S, R4W, U.S.B.&M.****1800' FNL, 1075' FWL****FIGURE #2**

1"=40'
X-SECTION
SCALE
1"=80'

NOTE: ALL CUT/FILL
SLOPES ARE 1½:1
UNLESS OTHERWISE
NOTED

**APPROXIMATE YARDAGES**

TOTAL CUT (INCLUDING PIT) = 10,033 CU. YDS.

PIT CUT = 4955 CU. YDS.

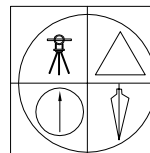
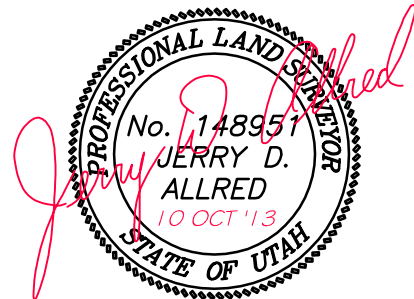
TOPSOIL STRIPPING: (6") = 3070 CU. YDS.

REMAINING LOCATION CUT = 2008 CU. YDS

TOTAL FILL = 2008 CU. YDS.

LOCATION SURFACE GRAVEL=1653 CU. YDS. (4" DEEP)

ACCESS ROAD GRAVEL=372 CU. YDS.

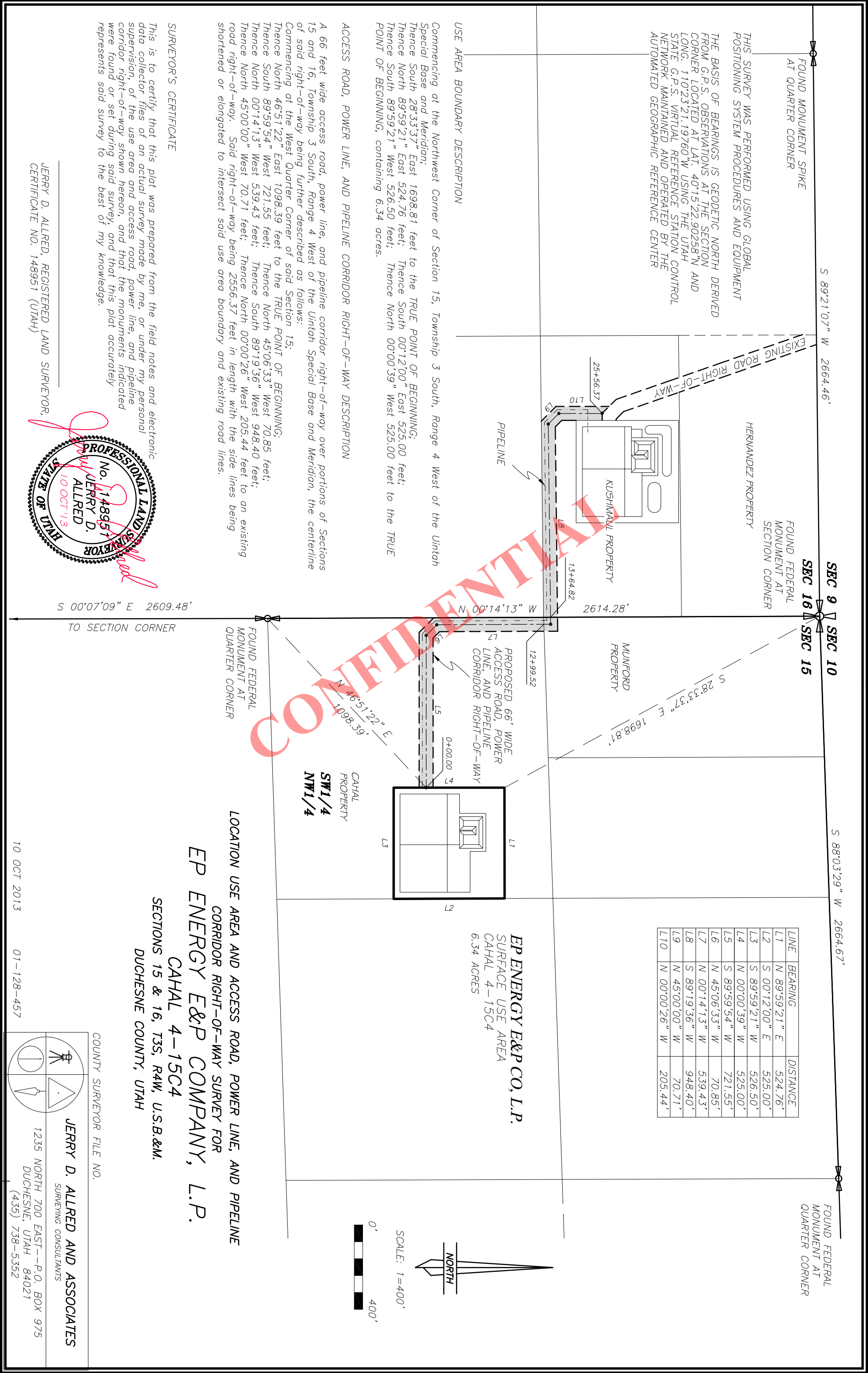
**JERRY D. ALLRED & ASSOCIATES**
SURVEYING CONSULTANTS1235 NORTH 700 EAST--P.O. BOX 975
DUCHESNE, UTAH 84021
(435) 738-5352

10 OCT 2013

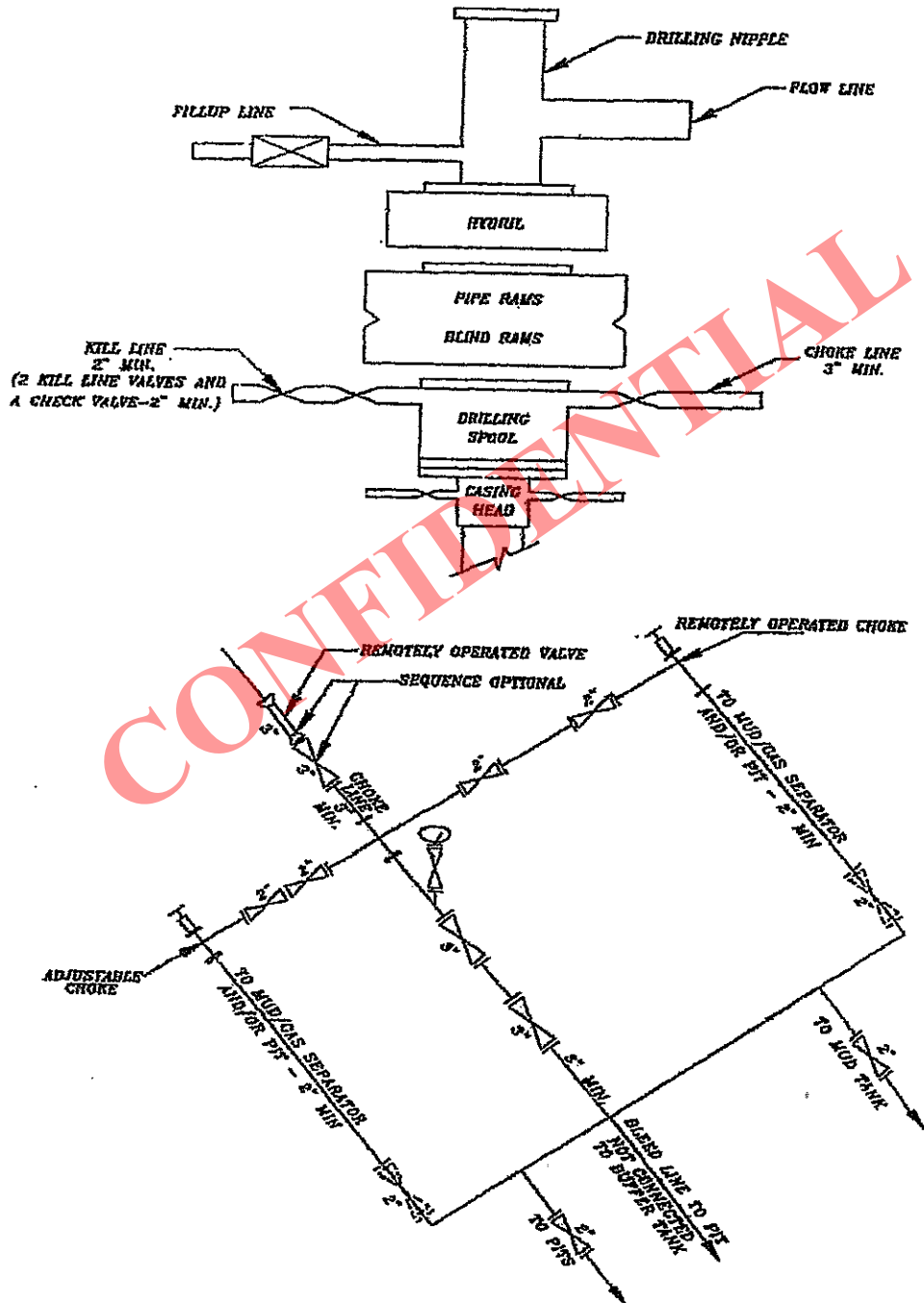
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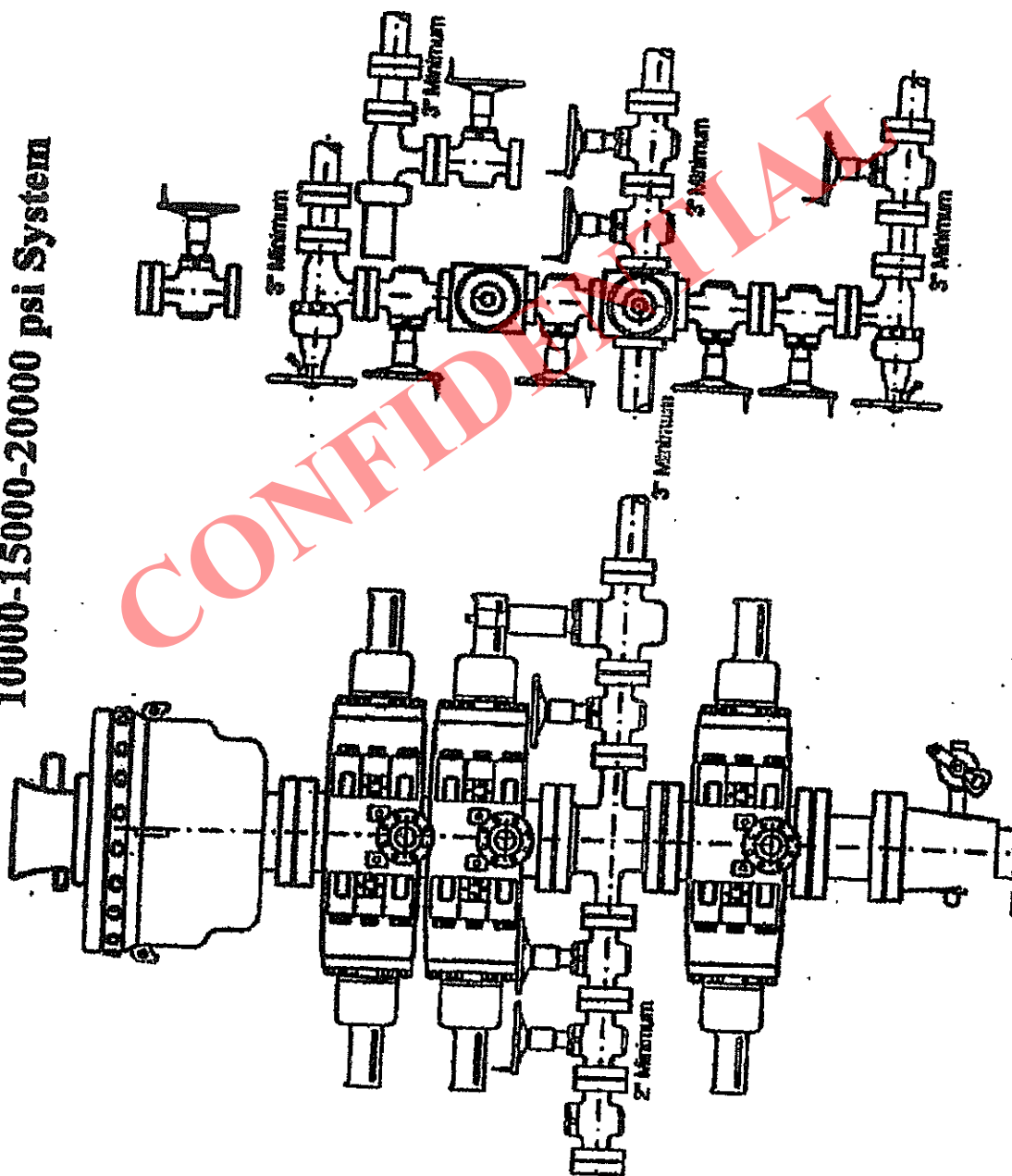
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5M BOP STACK and CHOKE MANIFOLD SYSTEM

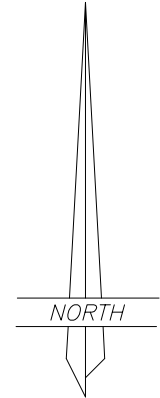
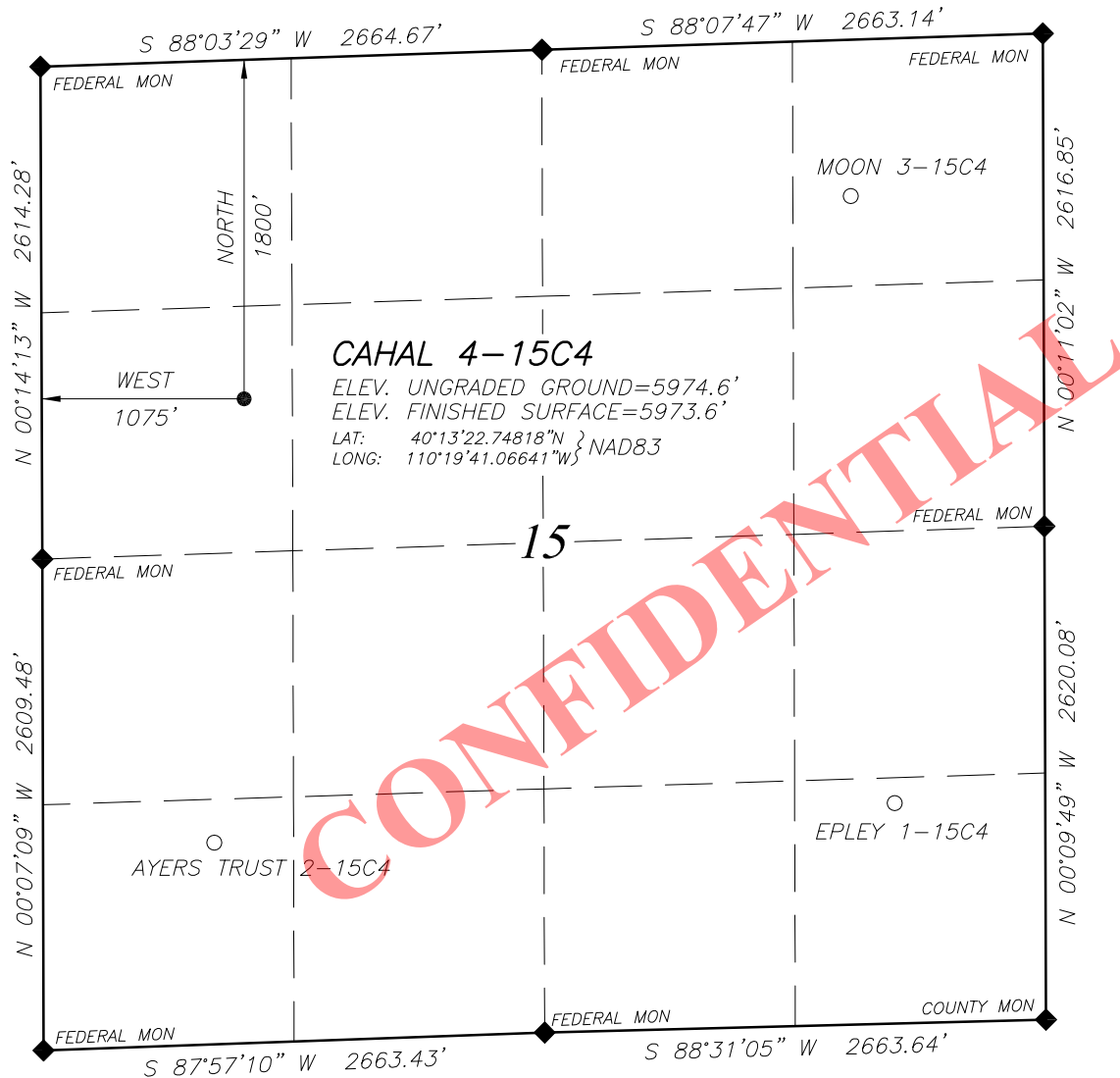


10000-15000-20000 psi System



EP ENERGY E&P COMPANY, L.P.**WELL LOCATION****CAHAL 4-15C4**

LOCATED IN THE SW¼ OF THE NW¼ OF
SECTION 15, T3S, R4W, U.S.B.&M.
DUCHESNE COUNTY, UTAH



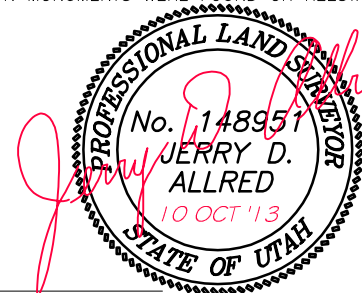
SCALE: 1" = 1000'



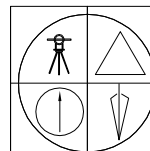
NOTE:
NAD27 VALUES FOR
WELL POSITION:
LAT: 40.22302841° N
LONG: 110.32736344° W

SURVEYOR'S CERTIFICATE

I HEREBY CERTIFY THAT THIS PLAT WAS PREPARED FROM THE FIELD NOTES AND ELECTRONIC DATA COLLECTOR FILES OF AN ACTUAL SURVEY PERFORMED BY ME, OR UNDER MY PERSONAL SUPERVISION, DURING WHICH THE SHOWN MONUMENTS WERE FOUND OR REESTABLISHED.



JERRY D. ALLRED, REGISTERED LAND SURVEYOR,
CERTIFICATE NO. 148951 (UTAH)

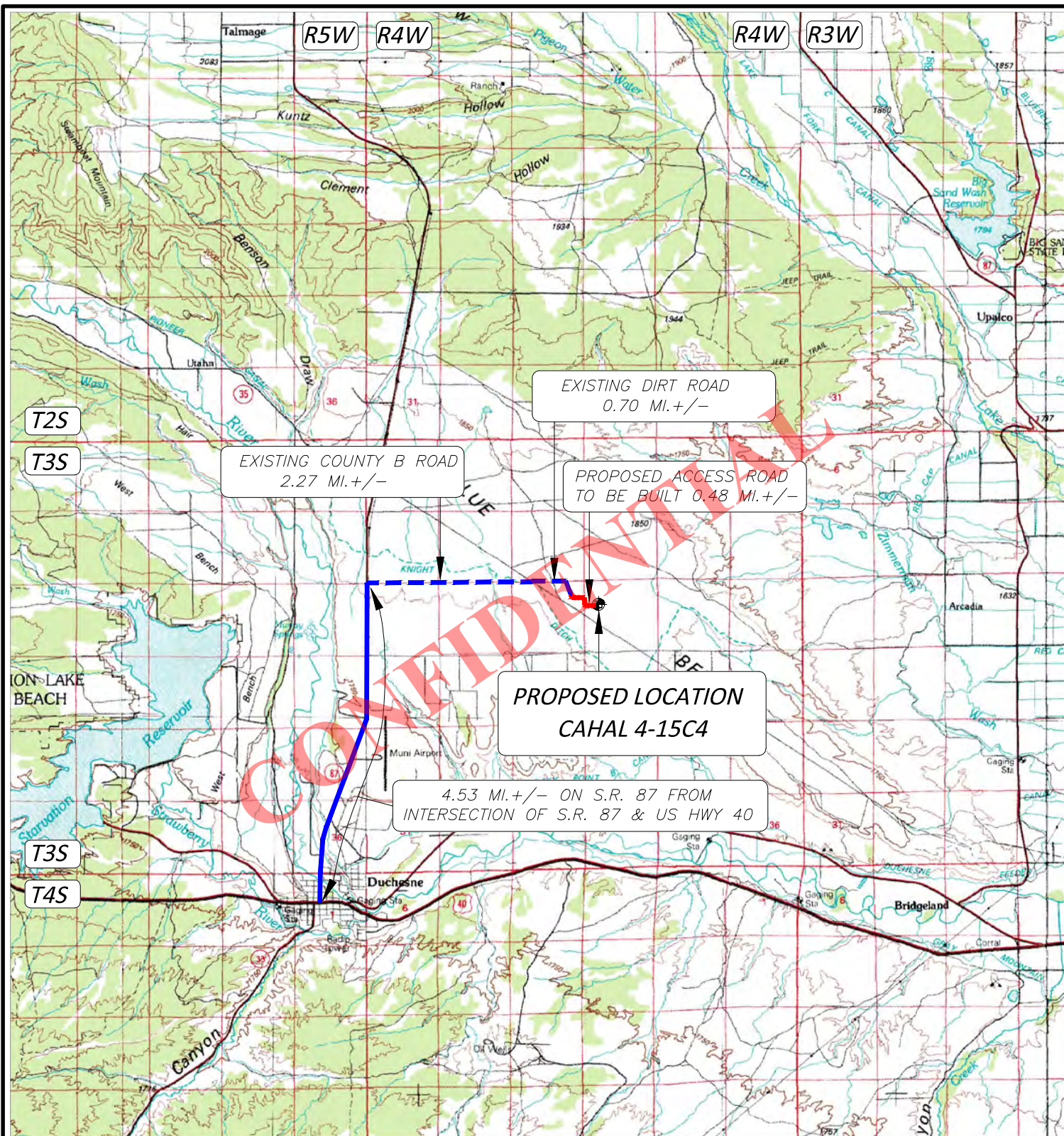


JERRY D. ALLRED & ASSOCIATES
SURVEYING CONSULTANTS

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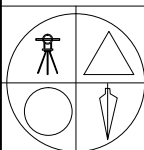
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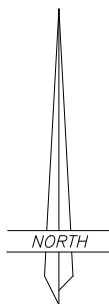
● PROPOSED WELL LOCATION

01-128-457



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EP ENERGY E&P COMPANY, L.P.

CAHAL 4-15C4

SECTION 15, T3S, R4W, U.S.B.&M.

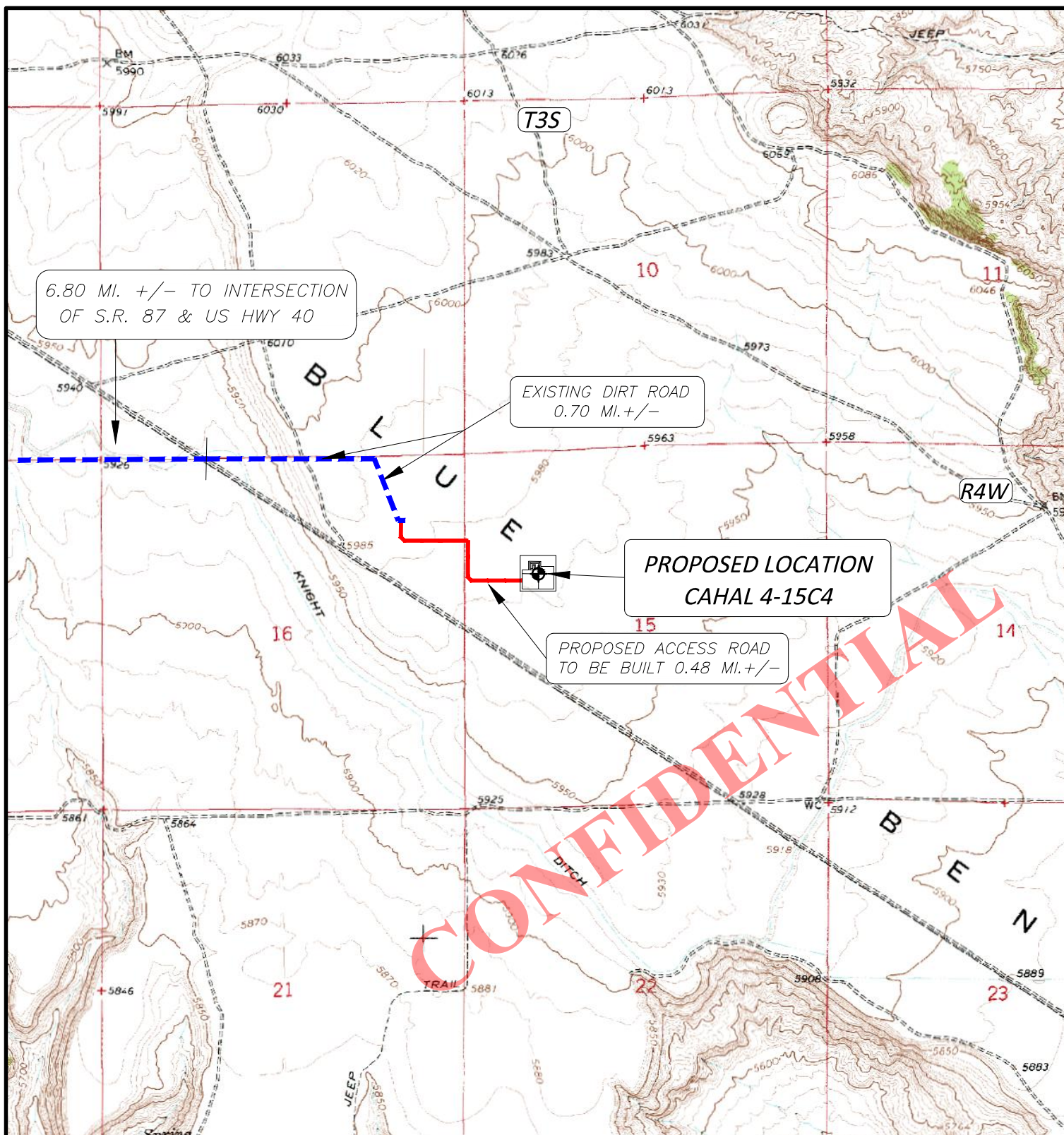
1800' FNL 1075' FWL

TOPOGRAPHIC MAP "A"

SCALE: 1"=10,000'

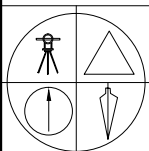
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**LEGEND:**

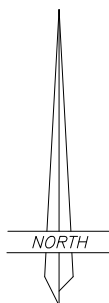
- PROPOSED WELL LOCATION
- PROPOSED ACCESS ROAD
- EXISTING GRAVEL ROAD
- EXISTING PAVED ROAD

01-128-457



JERRY D. ALLRED & ASSOCIATES
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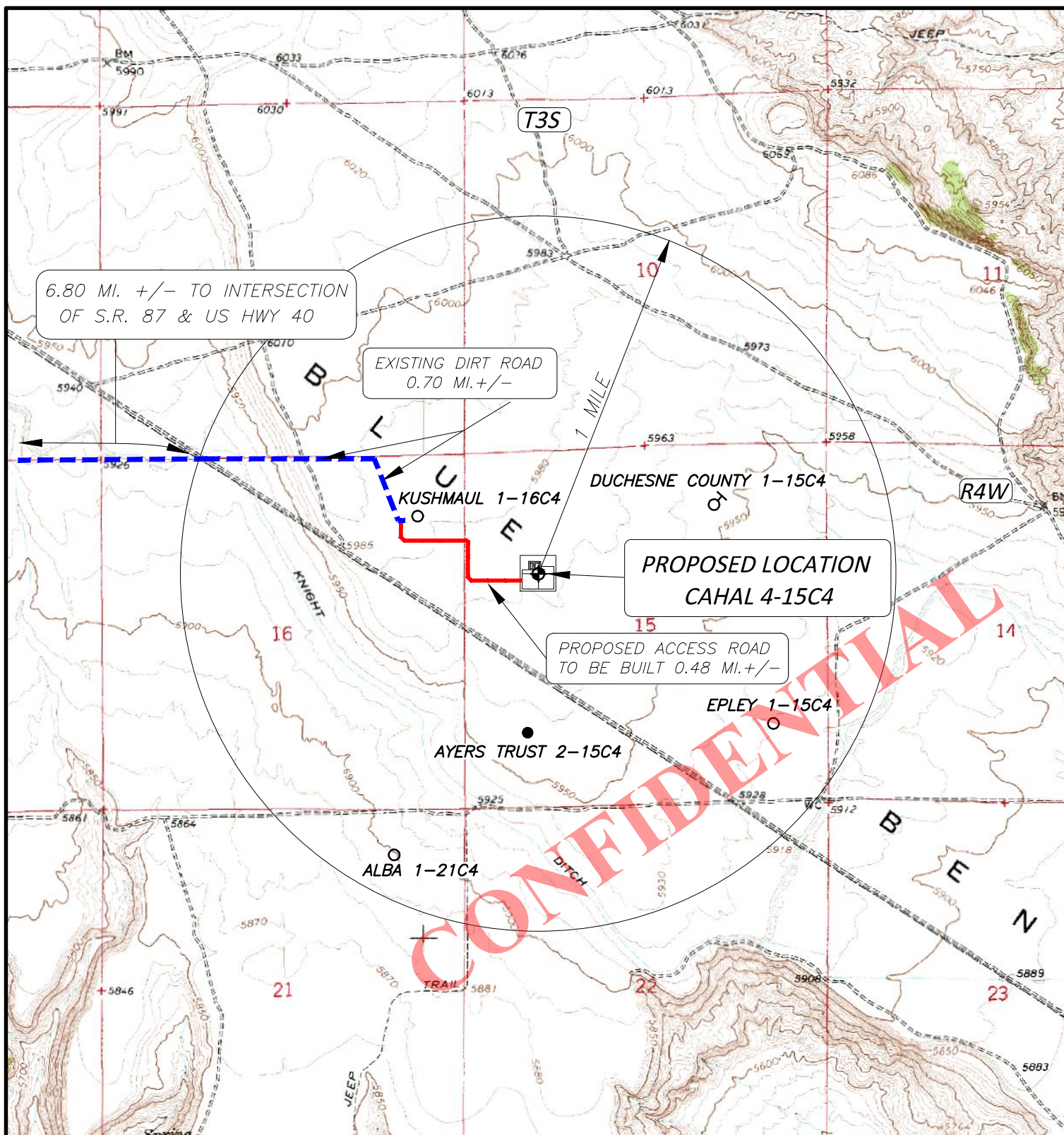
EP ENERGY E&P COMPANY, L.P.

CAHAL 4-15C4
SECTION 15, T3S, R4W, U.S.B.&M.
1800' FNL 1075' FWL

TOPOGRAPHIC MAP "B"

SCALE: 1"=2000'
10 OCT 2013

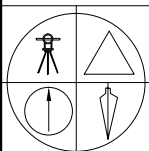
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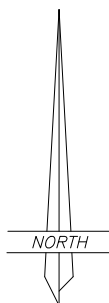
**LEGEND:**

PROPOSED WELL LOCATION

2-25C6

01-128-457


JERRY D. ALLRED & ASSOCIATES
 SURVEYING CONSULTANTS

 1235 NORTH 700 EAST--P.O. BOX 975
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 (435) 738-5352
**EP ENERGY E&P COMPANY, L.P.**

CAHAL 4-15C4

SECTION 15, T3S, R4W, U.S.B.&M.

1800' FNL 1075' FWL

TOPOGRAPHIC MAP "C"

SCALE: 1"=2000'

10 OCT 2013

RECEIVED: March 12, 2015

AFFIDAVIT OF SURFACE USE AGREEMENT AND RIGHT-OF-WAY AGREEMENT

This **Affidavit of Surface Use Agreement and Right-of-Way Agreement** ("**Affidavit**"), dated effective this 26th day of January, 2015 ("**Effective Date**"), is being made by **EP Energy E&P Company, L.P.** ("**EP Energy**"), a Delaware limited partnership, whose address is 1001 Louisiana Street, Suite 2400, Houston, Texas 77002, and herein represented by **John DeWitt, Jr.** ("**Affiant**"), being first duly sworn upon oath, who hereby deposes and states as follows:

1. Affiant is over eighteen (18) years of age and is currently employed by EP Energy as a Staff Landman.

2. EP Energy is the operator of the proposed Cahal 4-15C4 (the "**Well**") which is located in the Southwest Quarter of the Northwest Quarter (SW¹/₄NW¹/₄) of Section 15, Township 3 South, Range 4 West, U.S.M., Duchesne County, Utah (the "**Drillsite Location**"). The surface owner(s) of the Drillsite Location is John M. Cahal (the "**Surface Owner**"), whose mailing address is 3127 North 17th Avenue, Phoenix, Arizona 85015, and whose telephone number is (602)-369-0839.

3. EP Energy and the Surface Owner have entered into and executed that certain *Surface Use Agreement*, dated effective January 31, 2014, to cover any and all injuries or damages of every character and description sustained by the Surface Owner or Surface Owner's property as a result of EP Energy's operations including, but not limited to, construction of the Drillsite Location as more particularly described therein.

4. EP Energy and the Surface Owner have also entered and executed that certain *Right-of-Way Agreement*, dated effective January 31, 2014, to cover any and all injuries or damages of every character and description sustained by the Surface Owner or Surface Owner's property as a result of EP Energy's operations including, but not limited to, construction and use of an access road, pipeline and/or power line corridor across portions of the Southwest Quarter of the Northwest Quarter (SW¹/₄NW¹/₄) of Section 15, Township 3 South, Range 4 West, U.S.M., Duchesne County, Utah.

FURTHER AFFIANT SAYETH NOT.

AFFIANT:

By: _____

Name: John DeWitt, Jr.

Title: Staff Landman

STATE OF TEXAS

§

§

COUNTY OF HARRIS

§

Sworn to and subscribed before me on this 26th day of January, 2015, by **John DeWitt, Jr.** as Staff Landman for **EP Energy E&P Company, L.P.**, a Delaware limited partnership, on behalf of said limited partnership.



Ginger M. Cearley
Notary Public in and for the State of Texas

[SEAL]

EP Energy E&P Company, L.P.

Related Surface Information

1. Current Surface Use:

- Livestock Grazing and Oil and Gas Production.

2. Proposed Surface Disturbance:

- The road will be crown and ditch. Water wings will be constructed on the access road as needed.
- The topsoil will be windrowed and re-spread in the borrow area.
- New road to be constructed will be approximately .48 miles in length and 66 feet wide.
- All equipment and vehicles will be confined to the access road, pad and area specified in the APD.

3. Location Of Existing Wells:

- Existing oil, gas wells within one (1) mile radius of proposed well are provided in EXHIBIT C.

4. Location And Type Of Drilling Water Supply:

- Drilling water: Duchesne City Water

5. Existing/Proposed Facilities For Productive Well:

- There are no existing facilities that will be utilized for this well.
- A pipeline corridor .48 miles will parallel the proposed access road. The corridor will contain one 4 inch gas line and one 2 inch gas line and one 2 inch Salt Water disposal line. Rehabilitation of unneeded, previously disturbed areas will consist of backfilling and contouring the reserve pit area; backsloping and contouring all cut and fill slopes. These areas will be reseeded. Refer to plans for reclamation of surface for details.
- Upgrade and maintain access roads and drainage control structures (e.g., culverts, drainage dips, ditching, etc.) as necessary to prevent soil erosion and accommodate safe, year-round traffic.

6. Construction Materials:

- Native soil from road and location will be used for construction materials along with gravel and/or scoria road base material. In the event that conditions should necessitate graveling of all or part of the access road and location, surfacing materials will be purchased from commercial suppliers in the marketing area.

7. Methods For Handling Waste Disposal:

- The reserve pit will be designed to prevent the collection of surface runoff and will be constructed with a minimum of ½ the total depth below the original ground surface on the lowest point with the pit. The pit will be lined with a 20-mil polyethylene to prevent leakage of fluids. The liner will be rolled into place and secured at the ends, i.e. buried on top of the pit berms. Prior to use, the reserve pit will be fenced on three sides; the fourth side will be fenced at the time the rig is removed. Drilling fluids, cuttings and produced water will be contained in the reserve pit (trash will be placed in the trash cage). Fluids in the reserve pit will be allowed to evaporate prior to pit burial.
- Garbage and other trash will be contained in the portable trash cage and hauled off the location to an authorized disposal site. Any trash on the pad will be cleaned up prior to the rig moving off location and hauled to an authorized disposal site.
- Sewage will be handled in Portable Toilets.
- Produced water will be placed in the reserve pit for a period not to exceed ninety days after initial production. Any hydrocarbons produced during completion work will be contained in test tanks and removed from the location at a later date.
- Water from the reserve pit may be used for drilling of additional wells. The water will be trucked along access roads as approved in pertinent APD's

8. Ancillary Facilities:

- There will be no ancillary facilities associated with this project.

9. **Surface Reclamation Plans:**

Backfilling of the pits will be done when dry. In the event of a dry hole, the location will be re-contoured, the topsoil will be distributed evenly over the entire location, and the seedbed prepared.

- Seed will be planted after September 15th, and prior to ground frost, or seed will be planted after the frost has left and before May 15th. Slopes to steep for machinery will be hand broadcast and raked with twice the specified amount of seed.
 1. The construction program and design are on the attached cut, fill and cross sectional diagrams.
 2. Prior to construction, all topsoil will be removed from the entire site and stockpiled. Topsoil for this site is the first 6 inches of soil materials.
 3. After the location has been reshaped and after redistributing the topsoil, the operator will rip and scarify the drilling platform and access road on the contour, to a depth of at least 12 inches.
- Rehabilitation will begin upon the completion of the drilling. Complete rehabilitation will depend on weather conditions and the amount of time required to dry the reserve pit.
 1. All rehabilitation work including seeding will be completed as soon as weather and the reserve pit conditions are appropriate.
 2. Landowner will be contacted for rehabilitation requirements.

10. **Surface Ownership:**

John M. Cahal
3127 North 17th Avenue
Phoenix, AZ 85015
602-369-0839

Other Information:

- The surface soil consists of clay, and silt.
- Flora – vegetation consists of the following: Sagebrush, Juniper and prairie grasses.
- Fauna – antelope, deer, coyotes, raptors, small mammals, and domestic grazing animals.
- Current surface uses – Livestock grazing and mineral exploration and production.

• **Operator and Contact Persons:**

Construction and Reclamation:

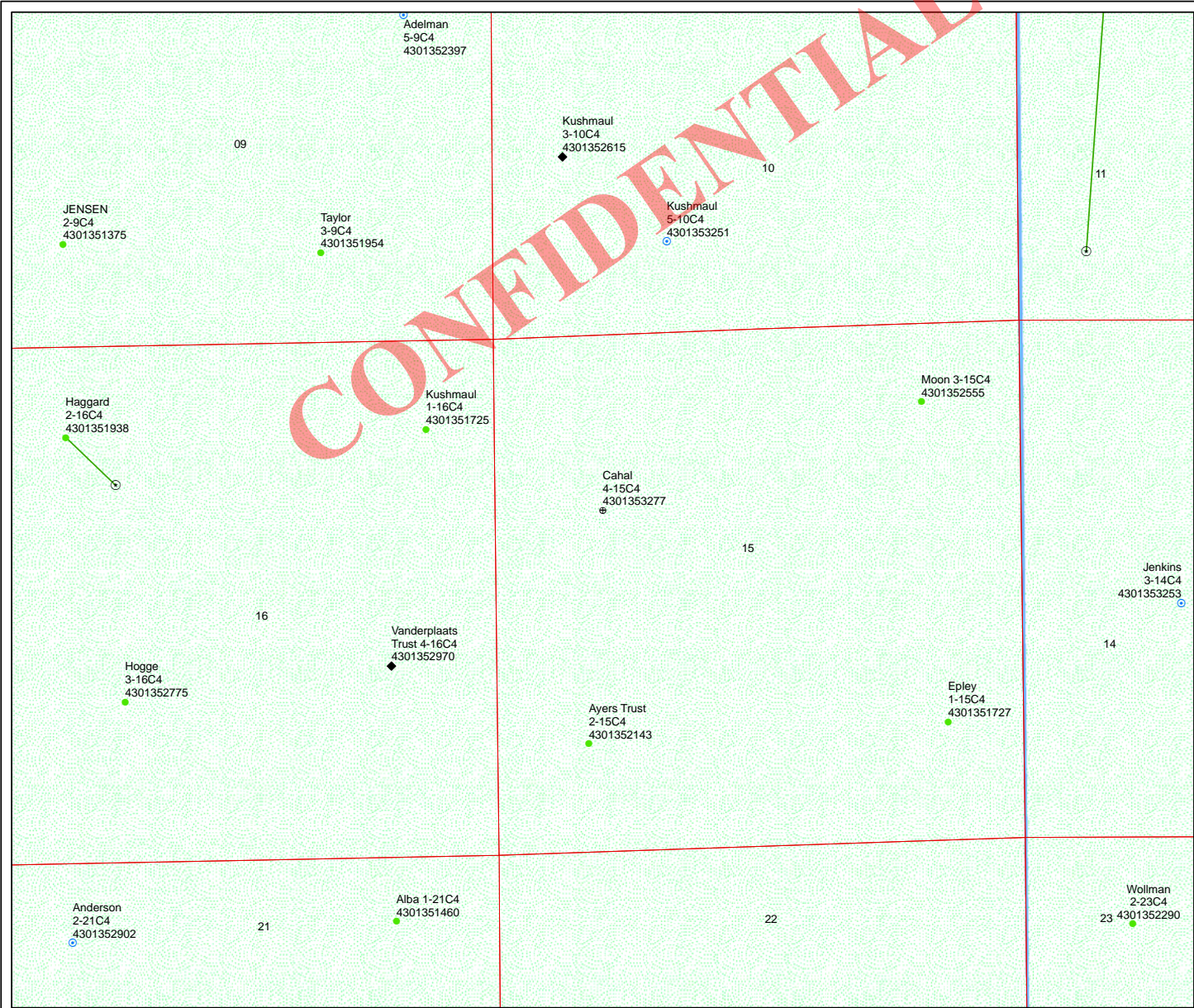
EP Energy E&P Company, L.P.
Wayne Garner
PO Box 410
Altamont, Utah 84001
435-454-3394 – Office
435-823-1490 – Cell

Regarding This APD

EP Energy E&P Company, L.P.
Maria S. Gomez
1001 Louisiana, Rm 2730D
Houston, Texas 77002
713-997-5038 – Office

Drilling

EP Energy E&P Company, L.P.
Brad MacAfee – Drilling Engineer
1001 Louisiana, Rm 2660D
Houston, Texas 77002
713-997-6383 – office
281-813-0902 – Cell



API Number: 4301353277

Well Name: Cahal 4-15C4

Township: T03.0S Range: R04.0W Section: 15 Meridian: U

Operator: EP ENERGY E&P COMPANY, L.P.

Map Prepared: 3/12/2015
Map Produced by Diana Mason

Wells Query

Status

- APD - Approved Permit
- DRL - Spudded (Drilling Commenced)
- GRW - Gas Injection
- GS - Gas Storage
- LOC - New Location
- OPS - Operation Suspended
- PA - Plugged Abandoned
- PGW - Producing Gas Well
- POW - Producing Oil Well
- SGW - Shut-in Gas Well
- SOW - Shut-in Oil Well
- TA - Temp. Abandoned
- TW - Test Well
- WDW - Water Disposal
- WW - Water Injection Well
- WSW - Water Supply Well

Units

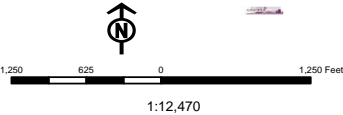
Status

- ACTIVE
- EXPLORATORY
- GAS STORAGE
- NF PP OIL
- NF SECONDARY
- PI OIL
- PP GAS
- PP GEOTHERML
- PP OIL
- SECONDARY
- TERMINATED

Fields

Status

- Unknown
- ABANDONED
- ACTIVE
- COMBINED
- INACTIVE
- STORAGE
- TERMINATED



Well Name	EP ENERGY E&P COMPANY, L.P. Cahal 4-15C4 43013532770000			
String	Surf	I1	L1	
Casing Size(in)	9.625	7.000	5.000	
Setting Depth (TVD)	2000	9200	12300	
Previous Shoe Setting Depth (TVD)	0	2000	9200	
Max Mud Weight (ppg)	8.3	10.4	12.4	
BOPE Proposed (psi)	500	10000	10000	
Casing Internal Yield (psi)	5750	11220	13940	
Operators Max Anticipated Pressure (psi)	7931		12.4	

Calculations	Surf String	9.625	"	
Max BHP (psi)	.052*Setting Depth*MW=	863		
			BOPE Adequate For Drilling And Setting Casing at Depth?	
MASP (Gas) (psi)	Max BHP-(0.12*Setting Depth)=	623	NO	Diverter stack
MASP (Gas/Mud) (psi)	Max BHP-(0.22*Setting Depth)=	423	YES	OK
			*Can Full Expected Pressure Be Held At Previous Shoe?	
Pressure At Previous Shoe	Max BHP-.22*(Setting Depth - Previous Shoe Depth)=	423	NO	OK
Required Casing/BOPE Test Pressure=		2000	psi	
*Max Pressure Allowed @ Previous Casing Shoe=		0	psi *Assumes 1psi/ft frac gradient	

Calculations	I1 String	7.000	"	
Max BHP (psi)	.052*Setting Depth*MW=	4975		
			BOPE Adequate For Drilling And Setting Casing at Depth?	
MASP (Gas) (psi)	Max BHP-(0.12*Setting Depth)=	3871	YES	10M Stack, 5M Annular
MASP (Gas/Mud) (psi)	Max BHP-(0.22*Setting Depth)=	2951	YES	OK
			*Can Full Expected Pressure Be Held At Previous Shoe?	
Pressure At Previous Shoe	Max BHP-.22*(Setting Depth - Previous Shoe Depth)=	3391	NO	OK
Required Casing/BOPE Test Pressure=		7854	psi	
*Max Pressure Allowed @ Previous Casing Shoe=		2000	psi *Assumes 1psi/ft frac gradient	

Calculations	L1 String	5.000	"	
Max BHP (psi)	.052*Setting Depth*MW=	7931		
			BOPE Adequate For Drilling And Setting Casing at Depth?	
MASP (Gas) (psi)	Max BHP-(0.12*Setting Depth)=	6455	YES	10M Stack, 5M Annular
MASP (Gas/Mud) (psi)	Max BHP-(0.22*Setting Depth)=	5225	YES	OK
			*Can Full Expected Pressure Be Held At Previous Shoe?	
Pressure At Previous Shoe	Max BHP-.22*(Setting Depth - Previous Shoe Depth)=	7249	YES	OK
Required Casing/BOPE Test Pressure=		9758	psi	
*Max Pressure Allowed @ Previous Casing Shoe=		9200	psi *Assumes 1psi/ft frac gradient	

Calculations	String		"	
Max BHP (psi)	.052*Setting Depth*MW=			
			BOPE Adequate For Drilling And Setting Casing at Depth?	
MASP (Gas) (psi)	Max BHP-(0.12*Setting Depth)=		NO	
MASP (Gas/Mud) (psi)	Max BHP-(0.22*Setting Depth)=		NO	
			*Can Full Expected Pressure Be Held At Previous Shoe?	
Pressure At Previous Shoe	Max BHP-.22*(Setting Depth - Previous Shoe Depth)=		NO	
Required Casing/BOPE Test Pressure=			psi	
*Max Pressure Allowed @ Previous Casing Shoe=			psi *Assumes 1psi/ft frac gradient	

EP ENERGY E&P COMPANY, L.P.
Cahal 4-15C4
43013532770000

Formation Depth (MD)
 UNKNWN 0

9.625 " Casing

2000 ' MD

2000 ' TVD

Surface ' TOC

1500 ' Tail

11.2 % Washout

12.25 " Hole

BMSGW

1800 ✓

GRRV

4191

GRTN1

5051

MHGNY

6001 ✓

stip cmt

7 " Casing

9200 ' MD

9200 ' TVD

Surface ' TOC

6808 ' Tail

5.8 % Washout

8.75 " Hole

LWR GR

7291

WSTCH

9131

TOL

9000 ' MD

9000 ' TVD

5 " Liner

12300 ' MD

12300 ' TVD

TOL ' TOC

12300 ' Tail

15 % Washout

6.125 " Hole

NO WDW, WIN

EP ENERGY E&P COMPANY, L.P.
Cahal 4-15C4
43013532770000

9.625 " Casing	MASP	Collapse Strength (psi)	Collapse Load (psi)	Collapse DF	Burst Strength (psi)	Burst Load (psi)	Burst DF	Tension Strength (kips)	Tension DF	Neutral Point (ft)	Tension Air (kips)	Tension Buoyed (kips)
	622	3090	862	3.58	5750	2000	2.88	737	9.21	1746	80.0	70.1
	MW (ppg)	Internal Grad. (psi)	Backup Mud (ppg)	Internal Mud (ppg)	Max Shoe Pressure (psi)*	CSG Wt (lbs/ft)	CSG Grade	CSG Collar	Cement Lead (sx)	Lead Yield	Cement Tail (sx)	Tail Yield
7 " Casing	8.3	0.12			3386	40.0	N-80	LTC	412	2.36	195	1.30
	MASP	Collapse Strength (psi)	Collapse Load (psi)	Collapse DF	Burst Strength (psi)	Burst Load (psi)	Burst DF	Tension Strength (kips)	Tension DF	Neutral Point (ft)	Tension Air (kips)	Tension Buoyed (kips)
	2946	9200	4970	1.85	11220	7241	1.55	797	3.55	7737	266.8	224.8
5 " Liner	MW (ppg)	Internal Grad. (psi)	Backup Mud (ppg)	Internal Mud (ppg)	Max Shoe Pressure (psi)*	CSG Wt (lbs/ft)	CSG Grade	CSG Collar	Cement Lead (sx)	Lead Yield	Cement Tail (sx)	Tail Yield
	10.4	0.22			7241	29.0	HCP-110	LTC	557	2.32	292	1.64
	MASP	Collapse Strength (psi)	Collapse Load (psi)	Collapse DF	Burst Strength (psi)	Burst Load (psi)	Burst DF	Tension Strength (kips)	Tension DF	Neutral Point (ft)	Tension Air (kips)	Tension Buoyed (kips)
5 " Liner	5217	13418	7923	1.69	13940	7923	1.76	495	10.27	11674	59.4	48.2
	MW (ppg)	Internal Grad. (psi)	Backup Mud (ppg)	Internal Mud (ppg)	Max Shoe Pressure (psi)*	CSG Wt (lbs/ft)	CSG Grade	CSG Collar	Cement Lead (sx)	Lead Yield	Cement Tail (sx)	Tail Yield
	12.4	0.22			9000	18.0	HCP-110	LTC	196	1.52		

ON-SITE PREDRILL EVALUATION

Utah Division of Oil, Gas and Mining

Operator EP ENERGY E&P COMPANY, L.P.
Well Name Cahal 4-15C4
API Number 43013532770000 **APD No** 11111 **Field/Unit** ALTAMONT
Location: 1/4,1/4 SWNW **Sec** 15 **Tw** 3.0S **Rng** 4.0W 1800 FNL 1075 FWL
GPS Coord (UTM) **Surface Owner** John M. Cahal

Participants

M. Jones (DOGM), R. Fairbanks, K. Carter, R. Fredrick (EP).

Regional/Local Setting & Topography

This location is staked northeast of the Duchesne, Utah approximately 4 miles and sits just north of the Duchesne River about 3 miles. The area is entirely a sagebrush/greasewood/cactus community on flat sandy clay bench.

Surface Use Plan

Current Surface Use

Wildlfe Habitat

New Road

Miles

0.1

Well Pad

Width 392 **Length** 410

Src Const Material

Onsite

Surface Formation

Ancillary Facilities N

Waste Management Plan Adequate?

Y

Environmental Parameters

Affected Floodplains and/or Wetlands N

Flora / Fauna

sagebrush/greasewood/cactus community.

Soil Type and Characteristics

sandy clay loam

Erosion Issues N

Sedimentation Issues N

Site Stability Issues N

Drainage Diversion Required? Y

Drainages adjacent to the proposed pad shall be diverted around the location.

Berm Required? Y

The well site shall be bermed to prevent fluids from entering or leaving the pad.

Erosion Sedimentation Control Required? N

Paleo Survey Run? Y Paleo Potential Observed? N Cultural Survey Run? Y Cultural Resources? N

Reserve Pit

Site-Specific Factors

Site Ranking

Distance to Groundwater (feet)	>200	0
Distance to Surface Water (feet)	>1000	0
Dist. Nearest Municipal Well (ft)	>5280	0
Distance to Other Wells (feet)	>1320	0
Native Soil Type	Mod permeability	10
Fluid Type	Fresh Water	5
Drill Cuttings	Normal Rock	0
Annual Precipitation (inches)	10 to 20	5
Affected Populations		
Presence Nearby Utility Conduits	Not Present	0
Final Score		20 1 Sensitivity Level

Characteristics / Requirements

Dugout earthen 150'x110'12' reserve pit is planned. The pit will be lined with a minimum 16 mil synthetic liner.

Closed Loop Mud Required? N Liner Required? Y Liner Thickness 16 Pit Underlayment Required? N

Other Observations / Comments

Surface owner was invited to attend via phone call but chose not to attend.

Mark Jones
Evaluator

3/30/2015
Date / Time

Application for Permit to Drill

Statement of Basis

Utah Division of Oil, Gas and Mining

APD No	API WellNo	Status	Well Type	Surf Owner	CBM
11111	43013532770000	LOCKED	OW	P	No
Operator	EP ENERGY E&P COMPANY, L.P.		Surface Owner-APD	John M. Cahal	
Well Name	Cahal 4-15C4		Unit		
Field	ALTAMONT		Type of Work	DRILL	
Location	SWNW 15 3S 4W U 1800 FNL (UTM) 557171E 4452734N		1075 FWL	GPS Coord	

Geologic Statement of Basis

EP proposes to set 40 feet of conductor and 2,000 feet of surface casing both of which will be cemented to surface. The surface and intermediate holes will be drilled utilizing fresh water mud. The estimated depth to the base of moderately saline ground water is 1,700 feet. A search of Division of Water Rights records indicates that there are 5 water wells within a 10,000 foot radius of the center of Section 15. These wells probably produce water from the Duchesne River Formation. Depths of the wells fall in the range of 285-650 feet. The wells are listed as being used for irrigation, stock watering and domestic. The proposed drilling, casing and cement program should adequately protect the highly used Duchesne River aquifer.

Brad Hill
APD Evaluator

4/8/2015
Date / Time

Surface Statement of Basis

This location is staked northeast of the Duchesne, Utah approximately 4 miles and sits just north of the Duchesne River about 3 miles. The area is entirely a sagebrush/greasewood/cactus community on flat sandy clay bench.

A synthetic liner with a minimum thickness of 16 mils shall be properly installed and maintained in the reserve pit.

The well site shall be bermed to prevent fluids from entering or leaving the pad.

Measures (BMP's) shall be taken to protect topsoil pile from erosion, sedimentation and stability issues.

Drainages adjacent to the proposed pad shall be diverted around the location.

The reserve pit shall be fenced upon completion of drilling operations.

Mark Jones
Onsite Evaluator

3/30/2015
Date / Time

Conditions of Approval / Application for Permit to Drill

Category	Condition
Pits	A synthetic liner with a minimum thickness of 16 mils shall be properly installed and maintained in the reserve pit.
Surface	The well site shall be bermed to prevent fluids from entering or leaving the pad.

Surface	Measures (BMP's) shall be taken to protect steep slopes and topsoil pile from erosion, sedimentation and stability issues.
Surface	Drainages adjacent to the proposed pad shall be diverted around the location.
Surface	The reserve pit shall be fenced upon completion of drilling operations.

CONFIDENTIAL

WORKSHEET APPLICATION FOR PERMIT TO DRILL

APD RECEIVED: 3/12/2015

API NO. ASSIGNED: 43013532770000

WELL NAME: Cahal 4-15C4

OPERATOR: EP ENERGY E&P COMPANY, L.P. (N3850)

PHONE NUMBER: 713 997-5038

CONTACT: Maria S. Gomez

PROPOSED LOCATION: SWNW 15 030S 040W

Permit Tech Review: ☒

SURFACE: 1800 FNL 1075 FWL

Engineering Review: ☒

BOTTOM: 1800 FNL 1075 FWL

Geology Review: ☒

COUNTY: DUCHESNE

LATITUDE: 40.22308

LONGITUDE: -110.32805

UTM SURF EASTINGS: 557171.00

NORTHINGS: 4452734.00

FIELD NAME: ALTAMONT

LEASE TYPE: 4 - Fee

LEASE NUMBER: Fee

PROPOSED PRODUCING FORMATION(S): GREEN RIVER(LWR)-WASATCH

SURFACE OWNER: 4 - Fee

COALBED METHANE: NO

RECEIVED AND/OR REVIEWED:

☒ PLAT☒ Bond: STATE/FEE - 400JU0708☐ Potash☐ Oil Shale 190-5☐ Oil Shale 190-3☐ Oil Shale 190-13☒ Water Permit: Duchesne City☐ RDCC Review:☒ Fee Surface Agreement☐ Intent to Commingle

Commingling Approved

LOCATION AND SITING:

☐ R649-2-3.

Unit:

☐ R649-3-2. General☐ R649-3-3. Exception☒ Drilling Unit

Board Cause No: Cause 139-124

Effective Date: 11/6/2014

Siting: 8 WELLS PER SECTION

☐ R649-3-11. Directional Drill

Comments: Presite Completed

Stipulations: 5 - Statement of Basis - bhill
12 - Cement Volume (3) - daynedoucet
27 - Other - daynedoucet

RECEIVED: April 09, 2015



GARY R. HERBERT
Governor

SPENCER J. COX
Lieutenant Governor

State of Utah

DEPARTMENT OF NATURAL RESOURCES

MICHAEL R. STYLER
Executive Director

Division of Oil, Gas and Mining

JOHN R. BAZA
Division Director

Permit To Drill

Well Name: Cahal 4-15C4

API Well Number: 43013532770000

Lease Number: Fee

Surface Owner: FEE (PRIVATE)

Approval Date: 4/9/2015

Issued to:

EP ENERGY E&P COMPANY, L.P., 1001 Louisiana, Houston, TX 77002

Authority:

Pursuant to Utah Code Ann. 40-6-1 et seq., and Utah Administrative Code R649-3-1 et seq., the Utah Division of Oil, Gas and Mining issues conditions of approval, and permit to drill the listed well. This permit is issued in accordance with the requirements of Cause 139-124. The expected producing formation or pool is the GREEN RIVER(LWR)-WASATCH Formation(s), completion into any other zones will require filing a Sundry Notice (Form 9). Completion and commingling of more than one pool will require approval in accordance with R649-3-22.

Duration:

This approval shall expire one year from the above date unless substantial and continuous operation is underway, or a request for extension is made prior to the expiration date

General:

Compliance with the requirements of Utah Admin. R. 649-1 et seq., the Oil and Gas Conservation General Rules, and the applicable terms and provisions of the approved Application for permit to drill.

Conditions of Approval:

Cement volume for the 5-1/2" casing shall be determined from actual hole diameter in order to place tail cement from the pipe setting depth back to 6800' MD (above lower Green River) as indicated in the submitted drilling plan.

A properly lubricated rotating head shall be used while air drilling.

Compliance with the Conditions of Approval/Application for Permit to Drill outlined in the Statement of Basis (copy attached).

Additional Approvals:

The operator is required to obtain approval from the Division of Oil, Gas and mining before performing any of the following actions during the drilling of this well:

- Any changes to the approved drilling plan - contact Dustin Doucet
- Significant plug back of the well - contact Dustin Doucet

- Plug and abandonment of the well - contact Dustin Doucet

Notification Requirements:

The operator is required to notify the Division of Oil, Gas and Mining of the following actions during drilling of this well:

- Within 24 hours following the spudding of the well - contact Carol Daniels
OR
submit an electronic sundry notice (pre-registration required) via the Utah Oil & Gas website
at <http://oilgas.ogm.utah.gov>
- 24 hours prior to testing blowout prevention equipment - contact Dan Jarvis
- 24 hours prior to cementing or testing casing - contact Dan Jarvis
- Within 24 hours of making any emergency changes to the approved drilling program
 - contact Dustin Doucet
- 24 hours prior to commencing operations to plug and abandon the well - contact Dan Jarvis

Contact Information:

The following are Division of Oil, Gas and Mining contacts and their telephone numbers (please leave a voicemail message if the person is not available to take the call):

- Carol Daniels 801-538-5284 - office
- Dustin Doucet 801-538-5281 - office
801-733-0983 - after office hours
- Dan Jarvis 801-538-5338 - office
801-231-8956 - after office hours

Reporting Requirements:

All reports, forms and submittals as required by the Utah Oil and Gas Conservation General Rules will be promptly filed with the Division of Oil, Gas and Mining, including but not limited to:

- Entity Action Form (Form 6) - due within 5 days of spudding the well
- Monthly Status Report (Form 9) - due by 5th day of the following calendar month
- Requests to Change Plans (Form 9) - due prior to implementation
- Written Notice of Emergency Changes (Form 9) - due within 5 days
- Notice of Operations Suspension or Resumption (Form 9) - due prior to implementation
- Report of Water Encountered (Form 7) - due within 30 days after completion
- Well Completion Report (Form 8) - due within 30 days after completion or plugging

Approved By:



For John Rogers
Associate Director, Oil & Gas

STATE OF UTAH DEPARTMENT OF NATURAL RESOURCES DIVISION OF OIL, GAS, AND MINING		FORM 9
SUNDRY NOTICES AND REPORTS ON WELLS Do not use this form for proposals to drill new wells, significantly deepen existing wells below current bottom-hole depth, reenter plugged wells, or to drill horizontal laterals. Use APPLICATION FOR PERMIT TO DRILL form for such proposals.		5. LEASE DESIGNATION AND SERIAL NUMBER: Fee
1. TYPE OF WELL Oil Well		6. IF INDIAN, ALLOTTEE OR TRIBE NAME:
2. NAME OF OPERATOR: EP ENERGY E&P COMPANY, L.P.		7. UNIT or CA AGREEMENT NAME:
3. ADDRESS OF OPERATOR: 1001 Louisiana, Houston, TX, 77002		8. WELL NAME and NUMBER: Cahal 4-15C4
PHONE NUMBER: 713 997-5038 Ext		9. API NUMBER: 43013532770000
4. LOCATION OF WELL FOOTAGES AT SURFACE: 1800 FNL 1075 FWL QTR/QTR, SECTION, TOWNSHIP, RANGE, MERIDIAN: Qtr/Qtr: SWNW Section: 15 Township: 03.0S Range: 04.0W Meridian: U		9. FIELD and POOL or WILDCAT: ALTAMONT
		COUNTY: DUCHESNE
		STATE: UTAH

11.

CHECK APPROPRIATE BOXES TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

TYPE OF SUBMISSION	TYPE OF ACTION
<input checked="" type="checkbox"/> NOTICE OF INTENT Approximate date work will start: 6/2/2015	<input type="checkbox"/> ACIDIZE <input checked="" type="checkbox"/> CHANGE TO PREVIOUS PLANS <input type="checkbox"/> CHANGE WELL STATUS <input type="checkbox"/> DEEPEN <input type="checkbox"/> OPERATOR CHANGE <input type="checkbox"/> PRODUCTION START OR RESUME <input type="checkbox"/> REPERFORATE CURRENT FORMATION <input type="checkbox"/> TUBING REPAIR <input type="checkbox"/> WATER SHUTOFF <input type="checkbox"/> WILDCAT WELL DETERMINATION
<input type="checkbox"/> SUBSEQUENT REPORT Date of Work Completion:	<input type="checkbox"/> ALTER CASING <input type="checkbox"/> CHANGE TUBING <input type="checkbox"/> COMMINGLE PRODUCING FORMATIONS <input type="checkbox"/> FRACTURE TREAT <input type="checkbox"/> PLUG AND ABANDON <input type="checkbox"/> RECLAMATION OF WELL SITE <input type="checkbox"/> SIDETRACK TO REPAIR WELL <input type="checkbox"/> VENT OR FLARE <input type="checkbox"/> SI TA STATUS EXTENSION <input type="checkbox"/> OTHER
<input type="checkbox"/> SPUD REPORT Date of Spud:	<input type="checkbox"/> CASING REPAIR <input type="checkbox"/> CHANGE WELL NAME <input type="checkbox"/> CONVERT WELL TYPE <input type="checkbox"/> NEW CONSTRUCTION <input type="checkbox"/> PLUG BACK <input type="checkbox"/> RECOMPLETE DIFFERENT FORMATION <input type="checkbox"/> TEMPORARY ABANDON <input type="checkbox"/> WATER DISPOSAL <input type="checkbox"/> APD EXTENSION
<input type="checkbox"/> DRILLING REPORT Report Date:	<input type="checkbox"/> OTHER: <input style="width: 100px;" type="text"/>

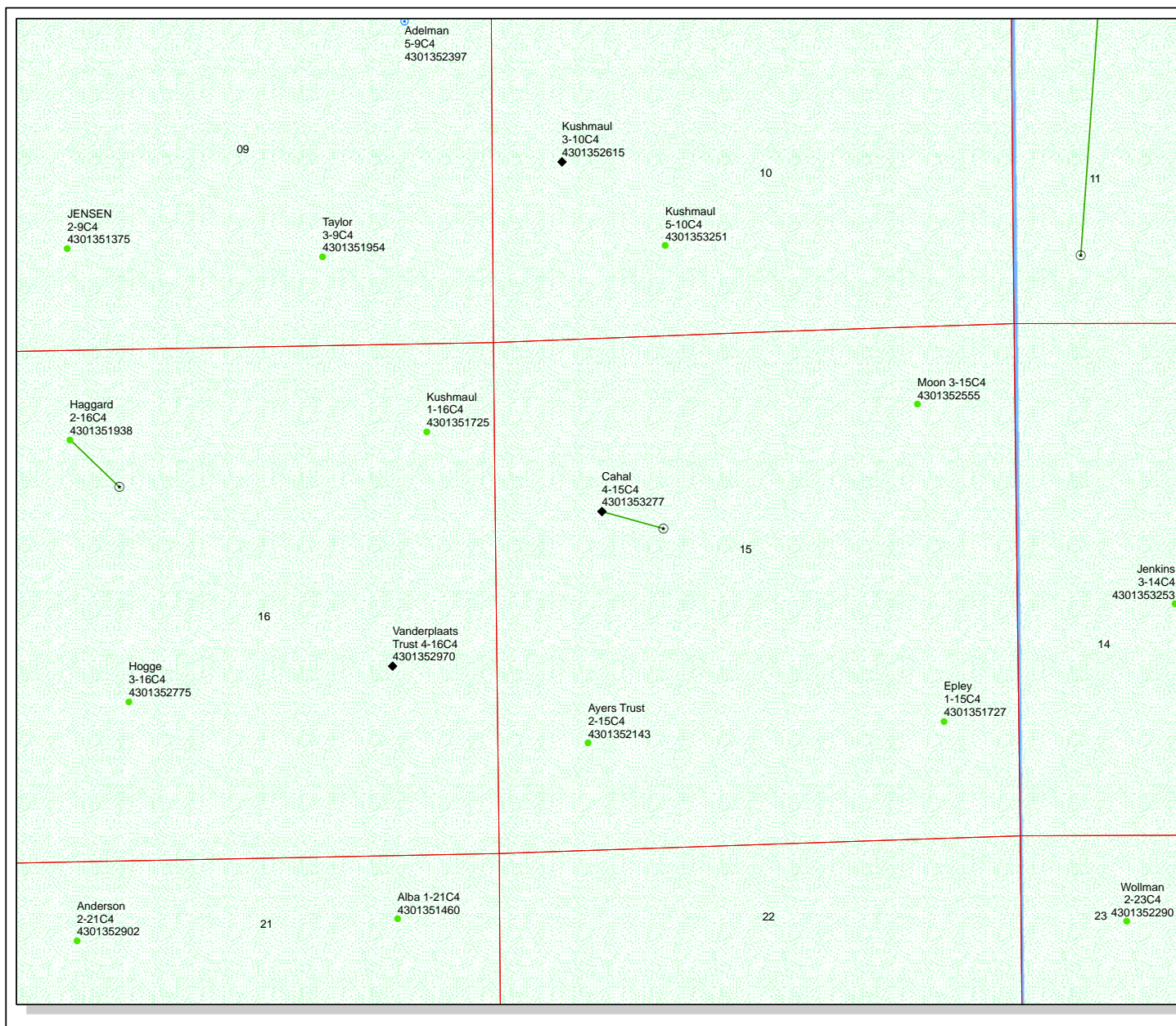
12. DESCRIBE PROPOSED OR COMPLETED OPERATIONS. Clearly show all pertinent details including dates, depths, volumes, etc.

EP requests approval to change from straight hole to directional well.
 See attached for details.

Approved by the
June 02, 2015
Oil, Gas and Mining

Date: _____
By: Derek Duff

NAME (PLEASE PRINT) Maria S. Gomez	PHONE NUMBER 713 997-5038	TITLE Principal Regulatory Analyst
SIGNATURE N/A	DATE 5/27/2015	



API Number: 4301353277

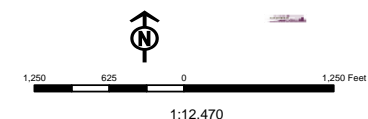
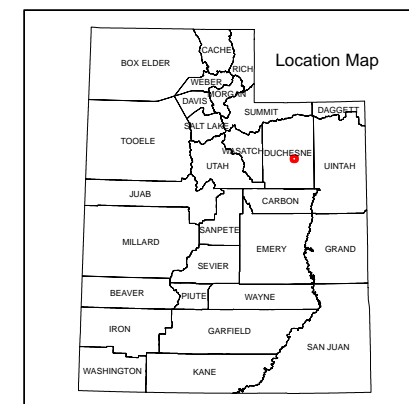
Well Name: Cahal 4-15C4

Township: T03.0S Range: R04.0W Section: 15 Meridian: U

Operator: EP ENERGY E&P COMPANY, L.P.

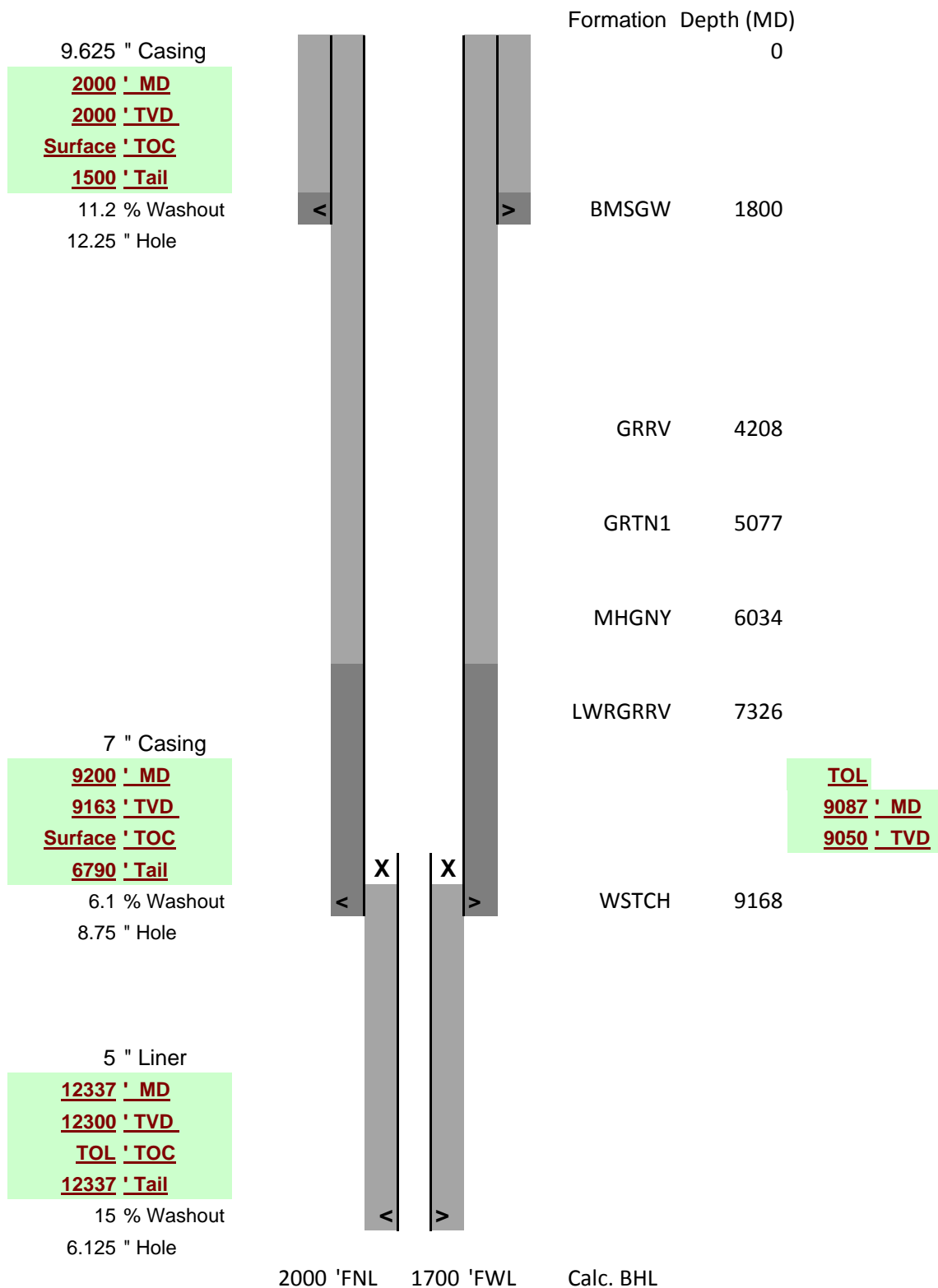
Map Prepared: 5/28/2015
Map Produced by Diana Mason

Wells Query		Units	
Status		STATUS	
APD - Approved Permit		ACTIVE	
DRL - Spudded (Drilling Commenced)		EXPLORATORY	
GRW - Gas Injection		GAS STORAGE	
GS - Gas Storage		NF PP OIL	
LOC - New Location		NF SECONDARY	
OPS - Operation Suspended		PI OIL	
PA - Plugged Abandoned		PP GAS	
PGW - Producing Gas Well		PP GEOTHERML	
POW - Producing Oil Well		PP OIL	
SGW - Shut-in Gas Well		SECONDARY	
SOW - Shut-in Oil Well		TERMINATED	
TA - Temp. Abandoned			
TW - Test Well			
WDW - Water Disposal			
WW - Water Injection Well			
WSW - Water Supply Well			
		Fields	
		STATUS	
		Unknown	
		ABANDONED	
		ACTIVE	
		COMBINED	
		INACTIVE	
		STORAGE	
		TERMINATED	



EP ENERGY E&P COMPANY, L.P.

Cahal 4-15C4 43013532770000



**Cahal 4-15C4
Sec. 15, T3S, R4W
DUCHESE COUNTY, UT**

EP ENERGY E&P COMPANY, L.P.

DRILLING PROGRAM

1. Estimated Tops of Important Geologic Markers

<u>Formation</u>	<u>Depth</u>
Green River (GRRV)	4,191' TVD
Green River (GRTN1)	5,051' TVD
Mahogany Bench	6,001' TVD
L. Green River	7,291' TVD
Wasatch	9,131' TVD
T.D. (Permit)	12,300' TVD / +/- 12,337' MD

2. Estimated Depths of Anticipated Water, Oil, Gas or Mineral Formations:

<u>Substance</u>	<u>Formation</u>	<u>Depth</u>
	Green River (GRRV)	4,191' TVD / 4,208' MD
	Green River (GRTN1)	5,051' TVD / 5,077' MD
	Mahogany Bench	6,001' TVD / 6,034' MD
Oil	L. Green River	7,291' TVD / 7,326' MD
Oil	Wasatch	9,131' TVD / 9,168' MD

3. Pressure Control Equipment: (Schematic Attached)

A Diverter Stack w/ rotating head on structural pipe from 40' MD/TVD to 2,000' MD/TVD. A 10M BOP stack w/ rotating head, 5M annular, flex rams, blind rams, mud cross & single w/ flex ram used from 2,000' MD/TVD to 9,237' MD / 9,200' TVD. A 10M BOP stack w/ rotating head, 5M annular, flex rams, blind rams, mud cross & single w/ flex ram from 9,237' MD / 9,200' TVD to TD (12,337' MD / 12,300' TVD).

The BOPE and related equipment will meet the requirements of the 5M and 10M system.

We have pre-set numerous wells around the proposed location and had no issues. The last 2 wells were the Jenkins 3-14C4 & Kushmaul 5-10C4 which are both less than 1.5 miles away. The casing designs on both of those wells were identical to the proposed design on this well.

There are 6 water wells within 10,000' of the proposed location.

There are 0 SWD wells within 3.0 miles of the proposed location.

OPERATORS MINIMUM SPECIFICATIONS FOR BOPE:

The surface casing will be equipped with a flanged casing head of 5M psi working pressure. An 11" 5M x 11" 10M spool, 11" x 10M psi BOP and 5M psi annular will be nipped up on the surface casing and tested to 250 psi low test / 3,000 psi high test for 10 minutes each prior to drilling out. The surface casing will be tested to 1,000 psi. for 30 mins. Intermediate casing will be tested to the greater of 1,500 psi or 0.22 psi/ft. The choke manifold equipment, upper Kelly cock and floor safety valves will be tested to 5M psi. The annular preventer will be tested to 250 psi low test / 4,000 psi high test. The 10M BOP will be installed with rotating head, 5M annular, flex rams, blind rams, mud cross & single w/ flex ram from surface shoe to TD. The BOPE will be hydraulically operated.

In addition, the BOP equipment will be tested after running intermediate casing, after any repairs to the equipment and at least once every 30 days. Pipe and blind rams will be activated on each trip, annular preventer will be activated weekly and weekly BOP drills will be held with each crew.

Statement on Accumulator System and Location of Hydraulic Controls:

TBD (**Patterson 307** or Precision 406) is expected to be used to drill the proposed well. Operations will commence after approval of this application. Manual and/or hydraulic controls will be in compliance with 5M and 10M psi systems.

Auxiliary Equipment:

- A) Pason Gas Monitoring 2,000' - TD
- B) Mud logger with gas monitor – 2,000' to TD
- C) Choke manifold with one manual and one hydraulic operated choke
- D) Full opening floor valve with drill pipe thread
- E) Upper and lower Kelly cock
- F) Shaker, de-sander and centrifuge

4. Proposed Casing & Cementing Program:

Please refer to the attached Wellbore Diagram.

All casing will meet or exceed the following design safety factors:

- Burst = 1.00
- Collapse = 1.125
- Tension = 1.2 (including 100k# overpull)

Cement design calculations for intermediate and production hole will be based on minimum 10% excess over gauge hole volumes. Actual volumes pumped will be a minimum of 10% excess over caliper volume to designed tops of cement for any section logged. A minimum of 50% excess over gauge volume will be pumped on surface casing.

5. **Drilling Fluids Program:**

Proposed Mud Program:

Interval	Type	Mud Weight
Surface	Air	Air
Intermediate	WBM	9.3 – 10.4
Production	WBM	11.0 – 12.4

Anticipated mud weights are based on actual offset well bottom-hole pressure data. Mud weights utilized may be somewhat higher to allow for trip margin and to provide hole stability for running logs and casing.

Visual mud monitoring equipment will be utilized.

6. **Evaluation Program:**

Logs:

Mud Log: 2,000' MD/TVD – TD

Open Hole Logs: Gamma Ray, Neutron-Density, Resistivity, Sonic, from surface casing shoe to TD.

7. **Abnormal Conditions:**

Maximum anticipated bottomhole pressure calculated at 12,300' TVD equals approximately 7,931 psi. This is calculated based on a 0.6448 psi/ft gradient (12.4 ppg mud density at TD).

Maximum anticipated surface pressure equals approximately 5,225 psi (bottomhole pressure minus the pressure of a partially evacuated hole calculated at 0.22 psi/ft).

Maximum anticipated surface pressure based on frac gradient at 7" casing shoe is 0.8 psi/ft at 9,200' TVD = 7,360 psi

BOPE and casing design will be based on the lesser of the two MASPs which is 5,225 psi.

8. **OPERATOR REQUESTS THAT THE PROPOSED WELL BE PLACED ON CONFIDENTIAL STATUS.**

MECHANICAL

RECEIVED: Jun. 01, 2015

DRILLING PROGRAM

CASING PROGRAM	SIZE	INTERVAL		WT.	GR.	CPLG.	BURST	COLLAPSE	TENSION
SURFACE	9-5/8"	0	2000	40.00	N-80	LTC	5,750	3,090	737
INTERMEDIATE	7"	0	9237	29.00	HCP-110	LTC	11,220	9,750	797
PRODUCTION LINER	5"	9087	12337	18.00	HCP-110	STL	13,940	15,450	341

CEMENT PROGRAM		FT. OF FILL	DESCRIPTION	SACKS	EXCESS	WEIGHT	YIELD
SURFACE	Lead	1,500	EXTENDACEM SYSTEM: Type V Cement + 2% Cal-Seal + 0.35% Versaset + 0.3% D-Air 5000 + 6% Salt + 2% Econolite + 0.125 Poly-E-Flake	412	100%	12.0 ppg	2.36
	Tail	500	HALCEM SYSTEM: Class G Cement + 3 lbm/sk Silicalite Compacted + 1% Salt + 0.3% Econolite + 0.25 lbm/sk Poly-E-Flake + 0.25 lbm/sk Kwik Seal + 0.3% D-AIR 5000	195	50%	14.3 ppg	1.30
INTERMEDIATE	Lead	6,787	EXTENDACEM SYSTEM: Class G Cement + 10% Bentonite + 0.1% SA-1015 + 0.2% Econolite + 0.2% Halad-322 + 3 lbm/sk Silicalite Compacted + 1 lbm/sk Granulite TR 1/4 + 0.25 lbm/sk Poly-E-Flake + 5 lbm/sk Kol-Seal + 1% HR-5	571	40%	12.0 ppg	2.32
	Tail	2,450	EXPANDACEM SYSTEM: Class G Cement + 4% Bentonite + 0.25 Poly-E-Flake + 0.1% Halad-413 + 5 lb/sk Silicalite Compacted + 0.15% SA-1015 + 0.3% HR-5	298	30%	13.0 ppg	1.64
PRODUCTION LINER		3,250	EXTENDACEM SYSTEM: Class G Cement + 0.2% Super CBL +0.3% Halad 344 + 0.3% Halad 413 + 5 lb/sk Silicalite + 20% SSA-1 + 2% Bentonite + 0.7% HR-5	194	30%	14.2 ppg	1.52

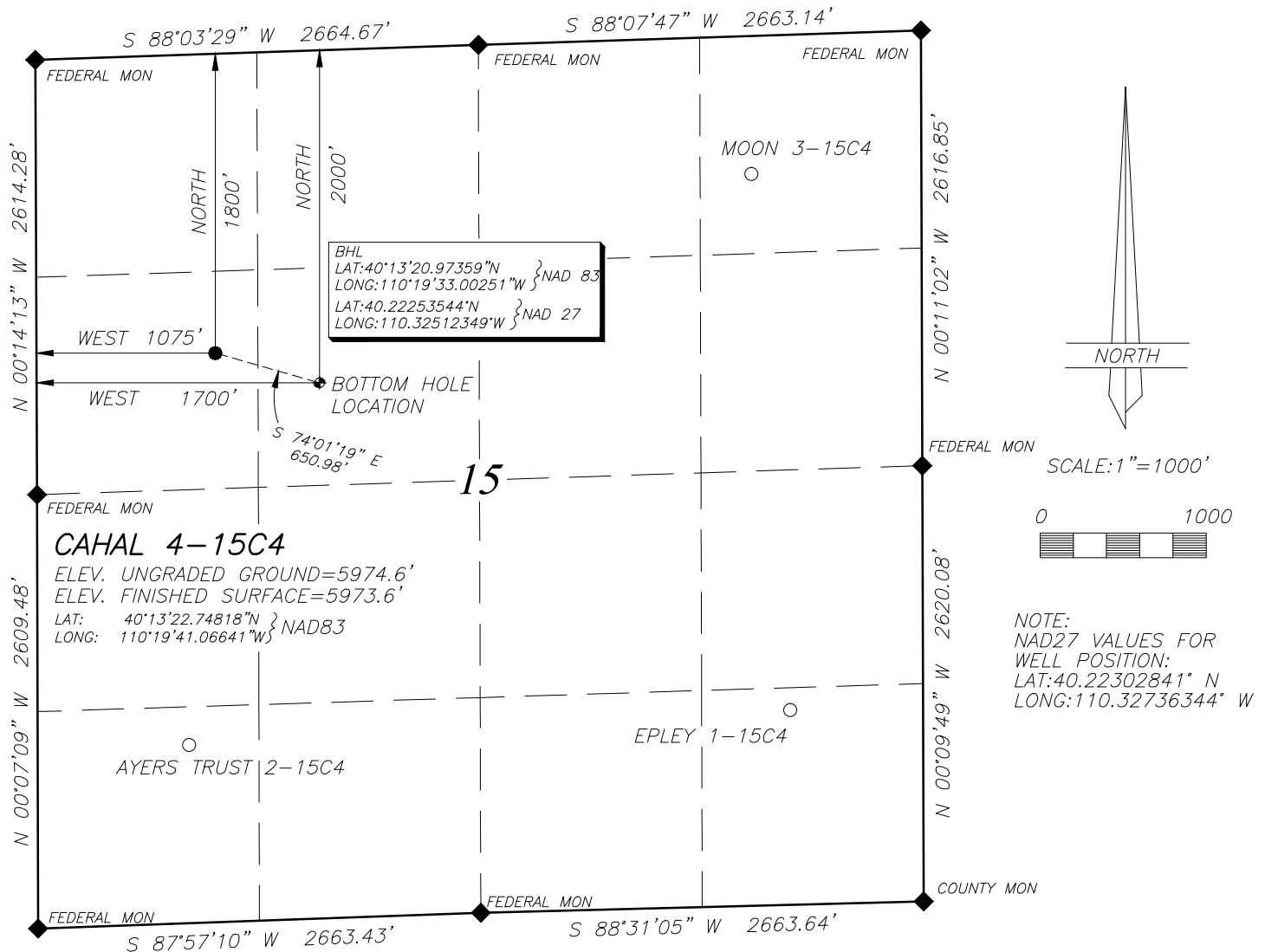
FLOAT EQUIPMENT & CENTRALIZERS	
SURFACE	PDC drillable guide shoe, 1 joint casing, PDC drillable float collar. Thread lock all float equipment. Install bow spring centralizers on the bottom 3 joints of casing & every 3rd joint thereafter if hole conditions allow.
INTERMEDIATE	Halliburton's PDC drillable 10M,P-110 float shoe, 1 joint, PDC drillable 10M, P-110 float collar. Thread lock all float equipment. Maker joint at +/- 7,250'.
LINER	Float shoe, 1 joint, float collar, 1 joint, landing collar. Thread lock all FE. Maker joints every 1000'.

PROJECT ENGINEER(S): Brad MacAfee 713-997-6383

MANAGER: Bob Dodd

EP ENERGY E&P COMPANY, L.P.**WELL LOCATION****CAHAL 4-15C4**

LOCATED IN THE SW $\frac{1}{4}$ OF THE NW $\frac{1}{4}$ OF
SECTION 15, T3S, R4W, U.S.B.&M.
DUCHESNE COUNTY, UTAH

**LEGEND AND NOTES**

◆ CORNER MONUMENTS FOUND AND USED BY THIS SURVEY

THE GENERAL LAND OFFICE (G.L.O.) PLAT WAS USED FOR REFERENCE AND CALCULATIONS AS WAS THE U.S.G.S. MAP

THIS SURVEY WAS PERFORMED USING GLOBAL POSITIONING SYSTEM PROCEDURES AND EQUIPMENT

THE BASIS OF BEARINGS IS GEODETIC NORTH DERIVED FROM G.P.S. OBSERVATIONS AT THE SECTION CORNER LOCATED AT LAT. 40°15'22.90258"N AND LONG. 110°23'21.19760"W USING THE UTAH STATE G.P.S. VIRTUAL REFERENCE STATION CONTROL NETWORK MAINTAINED AND OPERATED BY THE AUTOMATED GEOGRAPHIC REFERENCE CENTER

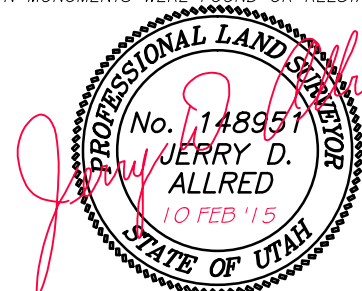
BASIS OF ELEVATIONS: NAVD 88 DATUM USING THE UTAH REFERENCE NETWORK CONTROL SYSTEM

REV 10 FEB 2015
REV 17 MAR 2014

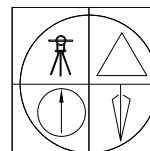
10 OCT 2013 01-128-457

SURVEYOR'S CERTIFICATE

I HEREBY CERTIFY THAT THIS PLAT WAS PREPARED FROM THE FIELD NOTES AND ELECTRONIC DATA COLLECTOR FILES OF AN ACTUAL SURVEY PERFORMED BY ME, OR UNDER MY PERSONAL SUPERVISION, DURING WHICH THE SHOWN MONUMENTS WERE FOUND OR REESTABLISHED.



JERRY D. ALLRED, PROFESSIONAL LAND SURVEYOR,
CERTIFICATE NO. 148951 (UTAH)



JERRY D. ALLRED & ASSOCIATES
SURVEYING CONSULTANTS

1235 NORTH 700 EAST--P.O. BOX 975
DUCHESNE, UTAH 84021
(435) 738-5352

RECEIVED: Jun. 01, 2015



EP Energy E&P Company, L.P.

Duchesne Co, UT

Cahal 4-15C4

4-15C4

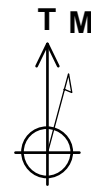
OH

Plan: Plan #1

Standard Planning Report

26 May, 2015





Azimuths to True North
Magnetic North: 11.10°

Magnetic Field
Strength: 51884.8snT
Dip Angle: 65.84°
Date: 5/26/2015
Model: BGGM2015

Project: Duchesne Co, UT
Site: Cahal 4-15C4
Well: 4-15C4
Wellbore: OH
Design: Plan #1

Duchesne Co, UT

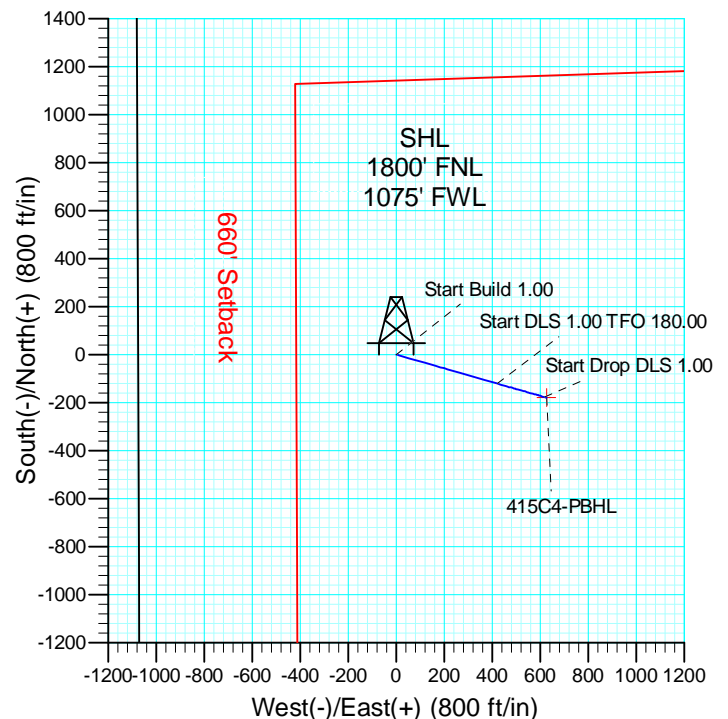
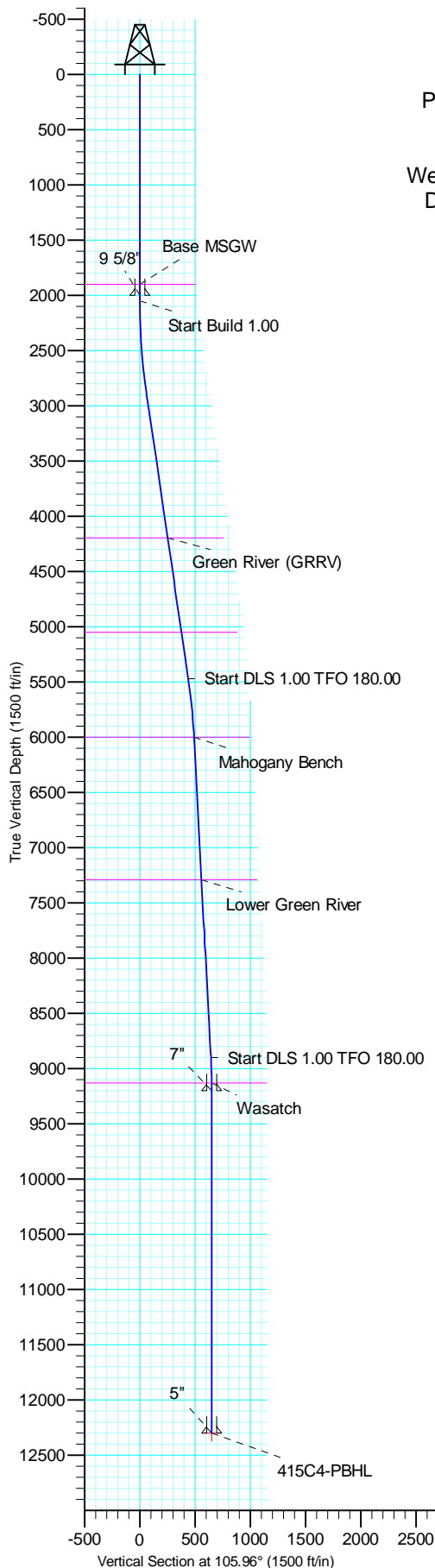
Geodetic System: US State Plane 1983
Datum: North American Datum 1983
Ellipsoid: GRS 1980
Zone: Utah Central Zone
System Datum: Mean Sea Level

Site Centre Northing: 7252092.31
Easting: 1967641.52

Positional Uncertainty: 0.00
Convergence: 0.75
Local North: True

SECTION DETAILS										
Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSec	Target
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2	2050.00	0.00	0.00	2050.00	0.00	0.00	0.00	0.00	0.00	
3	2881.00	8.31	105.96	2878.09	-16.54	57.84	1.00	105.96	60.16	415C4-PBHL
4	5500.41	8.31	105.96	5470.00	-120.60	421.84	0.00	0.00	438.74	
5	6031.41	3.00	105.96	5998.23	-134.98	472.13	1.00	180.00	491.04	
6	8937.17	3.00	105.96	8900.00	-176.80	618.34	0.00	0.00	643.12	
7	9237.17	0.00	0.00	9199.86	-178.96	625.89	1.00	180.00	650.97	
8	12337.31	0.00	0.00	12300.00	-178.96	625.89	0.00	0.00	650.97	415C4-PBHL

ANNOTATIONS										
TVD	MD	Inc	Azi	+N/-S	+E/-W	VSec	Departure	Annotation		
2050.00	2050.00	0.00	0.00	0.00	0.00	0.00	0.00	Start Build 1.00		
5470.00	5500.41	8.31	105.96	-16.54	57.84	60.16	60.16	Start DLS 1.00 TFO 180.00		
8900.00	8937.17	8.31	105.96	-120.60	421.84	438.74	438.74	Start DLS 1.00 TFO 180.00		
12300.00	12337.31	3.00	105.96	-134.98	472.13	491.04	491.04	TD at 12337.31		





Nabors Corporate Services Planning Report



Database:	RyanUS R5000	Local Co-ordinate Reference:	Well 4-15C4
Company:	EP Energy E&P Company, L.P.	TVD Reference:	WELL @ 5996.00ft (Original Well Elev)
Project:	Duchesne Co, UT	MD Reference:	WELL @ 5996.00ft (Original Well Elev)
Site:	Cahal 4-15C4	North Reference:	True
Well:	4-15C4	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #1		

Project	Duchesne Co, UT		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	Utah Central Zone		

Site		Cahal 4-15C4			
Site Position:		Northing:	7,252,092.31 usft	Latitude:	40° 13' 22.75 N
From:	Lat/Long	Easting:	1,967,641.52 usft	Longitude:	110° 19' 41.07 W
Position Uncertainty:	0.00 ft	Slot Radius:	13-3/16 "	Grid Convergence:	0.75 °

Well	4-15C4					
Well Position	+N/-S	0.00 ft	Northing:	7,252,092.31 usft	Latitude:	40° 13' 22.75 N
	+E/-W	0.00 ft	Easting:	1,967,641.52 usft	Longitude:	110° 19' 41.07 W
Position Uncertainty		0.00 ft	Wellhead Elevation:	0.00 ft	Ground Level:	5,974.00 f

Wellbore	OH				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	BGGM2015	5/26/2015	11.10	65.84	51,885

Design	Plan #1			
Audit Notes:				
Version:	Phase:	PLAN	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)
	0.00	0.00	0.00	105.96

Plan Sections										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	TFO (°)	Target
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2,050.00	0.00	0.00	2,050.00	0.00	0.00	0.00	0.00	0.00	0.00	
2,881.00	8.31	105.96	2,878.09	-16.54	57.84	1.00	1.00	0.00	105.96	415C4-PBHL
5,500.41	8.31	105.96	5,470.00	-120.60	421.84	0.00	0.00	0.00	0.00	
6,031.41	3.00	105.96	5,998.23	-134.98	472.13	1.00	-1.00	0.00	180.00	
8,937.17	3.00	105.96	8,900.00	-176.80	618.34	0.00	0.00	0.00	0.00	
9,237.17	0.00	0.00	9,199.86	-178.96	625.89	1.00	-1.00	-35.32	180.00	
12,337.31	0.00	0.00	12,300.00	-178.96	625.89	0.00	0.00	0.00	0.00	415C4-PBHL



Nabors Corporate Services Planning Report



Database:	RyanUS R5000	Local Co-ordinate Reference:	Well 4-15C4
Company:	EP Energy E&P Company, L.P.	TVD Reference:	WELL @ 5996.00ft (Original Well Elev)
Project:	Duchesne Co, UT	MD Reference:	WELL @ 5996.00ft (Original Well Elev)
Site:	Cahal 4-15C4	North Reference:	True
Well:	4-15C4	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #1		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00
200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	0.00	0.00
300.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00
400.00	0.00	0.00	400.00	0.00	0.00	0.00	0.00	0.00	0.00
500.00	0.00	0.00	500.00	0.00	0.00	0.00	0.00	0.00	0.00
600.00	0.00	0.00	600.00	0.00	0.00	0.00	0.00	0.00	0.00
700.00	0.00	0.00	700.00	0.00	0.00	0.00	0.00	0.00	0.00
800.00	0.00	0.00	800.00	0.00	0.00	0.00	0.00	0.00	0.00
900.00	0.00	0.00	900.00	0.00	0.00	0.00	0.00	0.00	0.00
1,000.00	0.00	0.00	1,000.00	0.00	0.00	0.00	0.00	0.00	0.00
1,100.00	0.00	0.00	1,100.00	0.00	0.00	0.00	0.00	0.00	0.00
1,200.00	0.00	0.00	1,200.00	0.00	0.00	0.00	0.00	0.00	0.00
1,300.00	0.00	0.00	1,300.00	0.00	0.00	0.00	0.00	0.00	0.00
1,400.00	0.00	0.00	1,400.00	0.00	0.00	0.00	0.00	0.00	0.00
1,500.00	0.00	0.00	1,500.00	0.00	0.00	0.00	0.00	0.00	0.00
1,600.00	0.00	0.00	1,600.00	0.00	0.00	0.00	0.00	0.00	0.00
1,700.00	0.00	0.00	1,700.00	0.00	0.00	0.00	0.00	0.00	0.00
1,800.00	0.00	0.00	1,800.00	0.00	0.00	0.00	0.00	0.00	0.00
1,900.00	0.00	0.00	1,900.00	0.00	0.00	0.00	0.00	0.00	0.00
Base MSGW									
2,000.00	0.00	0.00	2,000.00	0.00	0.00	0.00	0.00	0.00	0.00
9 5/8"									
2,050.00	0.00	0.00	2,050.00	0.00	0.00	0.00	0.00	0.00	0.00
Start Build 1.00									
2,100.00	0.50	105.96	2,100.00	-0.06	0.21	0.22	1.00	1.00	0.00
2,200.00	1.50	105.96	2,199.98	-0.54	1.89	1.96	1.00	1.00	0.00
2,300.00	2.50	105.96	2,299.92	-1.50	5.24	5.45	1.00	1.00	0.00
2,400.00	3.50	105.96	2,399.78	-2.94	10.28	10.69	1.00	1.00	0.00
2,500.00	4.50	105.96	2,499.54	-4.86	16.98	17.66	1.00	1.00	0.00
2,600.00	5.50	105.96	2,599.16	-7.25	25.36	26.38	1.00	1.00	0.00
2,700.00	6.50	105.96	2,698.61	-10.12	35.41	36.83	1.00	1.00	0.00
2,800.00	7.50	105.96	2,797.86	-13.47	47.13	49.02	1.00	1.00	0.00
2,881.00	8.31	105.96	2,878.09	-16.54	57.84	60.16	1.00	1.00	0.00
2,900.00	8.31	105.96	2,896.89	-17.29	60.48	62.90	0.00	0.00	0.00
3,000.00	8.31	105.96	2,995.84	-21.26	74.38	77.36	0.00	0.00	0.00
3,100.00	8.31	105.96	3,094.79	-25.24	88.27	91.81	0.00	0.00	0.00
3,200.00	8.31	105.96	3,193.74	-29.21	102.17	106.26	0.00	0.00	0.00
3,300.00	8.31	105.96	3,292.69	-33.18	116.06	120.71	0.00	0.00	0.00
3,400.00	8.31	105.96	3,391.64	-37.16	129.96	135.17	0.00	0.00	0.00
3,500.00	8.31	105.96	3,490.59	-41.13	143.86	149.62	0.00	0.00	0.00
3,600.00	8.31	105.96	3,589.54	-45.10	157.75	164.07	0.00	0.00	0.00
3,700.00	8.31	105.96	3,688.49	-49.07	171.65	178.53	0.00	0.00	0.00
3,800.00	8.31	105.96	3,787.44	-53.05	185.55	192.98	0.00	0.00	0.00
3,900.00	8.31	105.96	3,886.39	-57.02	199.44	207.43	0.00	0.00	0.00
4,000.00	8.31	105.96	3,985.34	-60.99	213.34	221.89	0.00	0.00	0.00
4,100.00	8.31	105.96	4,084.29	-64.97	227.23	236.34	0.00	0.00	0.00
4,200.00	8.31	105.96	4,183.24	-68.94	241.13	250.79	0.00	0.00	0.00
4,207.84	8.31	105.96	4,191.00	-69.25	242.22	251.92	0.00	0.00	0.00
Green River (GRRV)									
4,300.00	8.31	105.96	4,282.19	-72.91	255.03	265.24	0.00	0.00	0.00
4,400.00	8.31	105.96	4,381.14	-76.88	268.92	279.70	0.00	0.00	0.00
4,500.00	8.31	105.96	4,480.09	-80.86	282.82	294.15	0.00	0.00	0.00
4,600.00	8.31	105.96	4,579.04	-84.83	296.71	308.60	0.00	0.00	0.00



Nabors Corporate Services

Planning Report



Database:	RyanUS R5000	Local Co-ordinate Reference:	Well 4-15C4
Company:	EP Energy E&P Company, L.P.	TVD Reference:	WELL @ 5996.00ft (Original Well Elev)
Project:	Duchesne Co, UT	MD Reference:	WELL @ 5996.00ft (Original Well Elev)
Site:	Cahal 4-15C4	North Reference:	True
Well:	4-15C4	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #1		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
4,700.00	8.31	105.96	4,677.99	-88.80	310.61	323.06	0.00	0.00	0.00
4,800.00	8.31	105.96	4,776.94	-92.78	324.51	337.51	0.00	0.00	0.00
4,900.00	8.31	105.96	4,875.89	-96.75	338.40	351.96	0.00	0.00	0.00
5,000.00	8.31	105.96	4,974.84	-100.72	352.30	366.41	0.00	0.00	0.00
5,076.97	8.31	105.96	5,051.00	-103.78	362.99	377.54	0.00	0.00	0.00
Green River (GRTN1)									
5,100.00	8.31	105.96	5,073.79	-104.69	366.19	380.87	0.00	0.00	0.00
5,200.00	8.31	105.96	5,172.74	-108.67	380.09	395.32	0.00	0.00	0.00
5,300.00	8.31	105.96	5,271.69	-112.64	393.99	409.77	0.00	0.00	0.00
5,400.00	8.31	105.96	5,370.64	-116.61	407.88	424.23	0.00	0.00	0.00
5,500.41	8.31	105.96	5,470.00	-120.60	421.84	438.74	0.00	0.00	0.00
Start DLS 1.00 TFO 180.00									
5,600.00	7.31	105.96	5,568.66	-124.32	434.85	452.27	1.00	-1.00	0.00
5,700.00	6.31	105.96	5,667.95	-127.58	446.26	464.14	1.00	-1.00	0.00
5,800.00	5.31	105.96	5,767.44	-130.37	456.00	474.27	1.00	-1.00	0.00
5,900.00	4.31	105.96	5,867.08	-132.68	464.07	482.66	1.00	-1.00	0.00
6,000.00	3.31	105.96	5,966.86	-134.51	470.46	489.31	1.00	-1.00	0.00
6,031.41	3.00	105.96	5,998.23	-134.98	472.13	491.04	1.00	-1.00	0.00
6,034.19	3.00	105.96	6,001.00	-135.02	472.27	491.19	0.00	0.00	0.00
Mahogany Bench									
6,100.00	3.00	105.96	6,066.72	-135.97	475.58	494.63	0.00	0.00	0.00
6,200.00	3.00	105.96	6,166.58	-137.41	480.61	499.87	0.00	0.00	0.00
6,300.00	3.00	105.96	6,266.45	-138.85	485.64	505.10	0.00	0.00	0.00
6,400.00	3.00	105.96	6,366.31	-140.29	490.67	510.33	0.00	0.00	0.00
6,500.00	3.00	105.96	6,466.17	-141.72	495.71	515.57	0.00	0.00	0.00
6,600.00	3.00	105.96	6,566.03	-143.16	500.74	520.80	0.00	0.00	0.00
6,700.00	3.00	105.96	6,665.90	-144.60	505.77	526.03	0.00	0.00	0.00
6,800.00	3.00	105.96	6,765.76	-146.04	510.80	531.27	0.00	0.00	0.00
6,900.00	3.00	105.96	6,865.62	-147.48	515.83	536.50	0.00	0.00	0.00
7,000.00	3.00	105.96	6,965.49	-148.92	520.86	541.74	0.00	0.00	0.00
7,100.00	3.00	105.96	7,065.35	-150.36	525.90	546.97	0.00	0.00	0.00
7,200.00	3.00	105.96	7,165.21	-151.80	530.93	552.20	0.00	0.00	0.00
7,300.00	3.00	105.96	7,265.08	-153.24	535.96	557.44	0.00	0.00	0.00
7,325.96	3.00	105.96	7,291.00	-153.61	537.27	558.79	0.00	0.00	0.00
Lower Green River									
7,400.00	3.00	105.96	7,364.94	-154.68	540.99	562.67	0.00	0.00	0.00
7,500.00	3.00	105.96	7,464.80	-156.11	546.02	567.90	0.00	0.00	0.00
7,600.00	3.00	105.96	7,564.66	-157.55	551.06	573.14	0.00	0.00	0.00
7,700.00	3.00	105.96	7,664.53	-158.99	556.09	578.37	0.00	0.00	0.00
7,800.00	3.00	105.96	7,764.39	-160.43	561.12	583.60	0.00	0.00	0.00
7,900.00	3.00	105.96	7,864.25	-161.87	566.15	588.84	0.00	0.00	0.00
8,000.00	3.00	105.96	7,964.12	-163.31	571.18	594.07	0.00	0.00	0.00
8,100.00	3.00	105.96	8,063.98	-164.75	576.22	599.30	0.00	0.00	0.00
8,200.00	3.00	105.96	8,163.84	-166.19	581.25	604.54	0.00	0.00	0.00
8,300.00	3.00	105.96	8,263.71	-167.63	586.28	609.77	0.00	0.00	0.00
8,400.00	3.00	105.96	8,363.57	-169.07	591.31	615.01	0.00	0.00	0.00
8,500.00	3.00	105.96	8,463.43	-170.51	596.34	620.24	0.00	0.00	0.00
8,600.00	3.00	105.96	8,563.29	-171.94	601.37	625.47	0.00	0.00	0.00
8,700.00	3.00	105.96	8,663.16	-173.38	606.41	630.71	0.00	0.00	0.00
8,800.00	3.00	105.96	8,763.02	-174.82	611.44	635.94	0.00	0.00	0.00
8,900.00	3.00	105.96	8,862.88	-176.26	616.47	641.17	0.00	0.00	0.00
8,937.17	3.00	105.96	8,900.00	-176.80	618.34	643.12	0.00	0.00	0.00
Start DLS 1.00 TFO 180.00									



Nabors Corporate Services

Planning Report



Database:	RyanUS R5000	Local Co-ordinate Reference:	Well 4-15C4
Company:	EP Energy E&P Company, L.P.	TVD Reference:	WELL @ 5996.00ft (Original Well Elev)
Project:	Duchesne Co, UT	MD Reference:	WELL @ 5996.00ft (Original Well Elev)
Site:	Cahal 4-15C4	North Reference:	True
Well:	4-15C4	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #1		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
9,000.00	2.37	105.96	8,962.76	-177.61	621.17	646.06	1.00	-1.00	0.00
9,100.00	1.37	105.96	9,062.71	-178.50	624.31	649.33	1.00	-1.00	0.00
9,168.30	0.69	105.96	9,131.00	-178.84	625.49	650.56	1.00	-1.00	0.00
Wasatch									
9,200.00	0.37	105.96	9,162.70	-178.92	625.77	650.85	1.00	-1.00	0.00
9,237.17	0.00	0.00	9,199.86	-178.96	625.89	650.97	1.00	-1.00	-285.08
9,237.31	0.00	0.00	9,200.00	-178.96	625.89	650.97	0.00	0.00	0.00
7"									
9,300.00	0.00	0.00	9,262.69	-178.96	625.89	650.97	0.00	0.00	0.00
9,400.00	0.00	0.00	9,362.69	-178.96	625.89	650.97	0.00	0.00	0.00
9,500.00	0.00	0.00	9,462.69	-178.96	625.89	650.97	0.00	0.00	0.00
9,600.00	0.00	0.00	9,562.69	-178.96	625.89	650.97	0.00	0.00	0.00
9,700.00	0.00	0.00	9,662.69	-178.96	625.89	650.97	0.00	0.00	0.00
9,800.00	0.00	0.00	9,762.69	-178.96	625.89	650.97	0.00	0.00	0.00
9,900.00	0.00	0.00	9,862.69	-178.96	625.89	650.97	0.00	0.00	0.00
10,000.00	0.00	0.00	9,962.69	-178.96	625.89	650.97	0.00	0.00	0.00
10,100.00	0.00	0.00	10,062.69	-178.96	625.89	650.97	0.00	0.00	0.00
10,200.00	0.00	0.00	10,162.69	-178.96	625.89	650.97	0.00	0.00	0.00
10,300.00	0.00	0.00	10,262.69	-178.96	625.89	650.97	0.00	0.00	0.00
10,400.00	0.00	0.00	10,362.69	-178.96	625.89	650.97	0.00	0.00	0.00
10,500.00	0.00	0.00	10,462.69	-178.96	625.89	650.97	0.00	0.00	0.00
10,600.00	0.00	0.00	10,562.69	-178.96	625.89	650.97	0.00	0.00	0.00
10,700.00	0.00	0.00	10,662.69	-178.96	625.89	650.97	0.00	0.00	0.00
10,800.00	0.00	0.00	10,762.69	-178.96	625.89	650.97	0.00	0.00	0.00
10,900.00	0.00	0.00	10,862.69	-178.96	625.89	650.97	0.00	0.00	0.00
11,000.00	0.00	0.00	10,962.69	-178.96	625.89	650.97	0.00	0.00	0.00
11,100.00	0.00	0.00	11,062.69	-178.96	625.89	650.97	0.00	0.00	0.00
11,200.00	0.00	0.00	11,162.69	-178.96	625.89	650.97	0.00	0.00	0.00
11,300.00	0.00	0.00	11,262.69	-178.96	625.89	650.97	0.00	0.00	0.00
11,400.00	0.00	0.00	11,362.69	-178.96	625.89	650.97	0.00	0.00	0.00
11,500.00	0.00	0.00	11,462.69	-178.96	625.89	650.97	0.00	0.00	0.00
11,600.00	0.00	0.00	11,562.69	-178.96	625.89	650.97	0.00	0.00	0.00
11,700.00	0.00	0.00	11,662.69	-178.96	625.89	650.97	0.00	0.00	0.00
11,800.00	0.00	0.00	11,762.69	-178.96	625.89	650.97	0.00	0.00	0.00
11,900.00	0.00	0.00	11,862.69	-178.96	625.89	650.97	0.00	0.00	0.00
12,000.00	0.00	0.00	11,962.69	-178.96	625.89	650.97	0.00	0.00	0.00
12,100.00	0.00	0.00	12,062.69	-178.96	625.89	650.97	0.00	0.00	0.00
12,200.00	0.00	0.00	12,162.69	-178.96	625.89	650.97	0.00	0.00	0.00
12,300.00	0.00	0.00	12,262.69	-178.96	625.89	650.97	0.00	0.00	0.00
12,337.31	0.00	0.00	12,300.00	-178.96	625.89	650.97	0.00	0.00	0.00
TD at 12337.31 - 5" - 415C4-PBHL									

Design Targets									
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (usft)	Easting (usft)	Latitude	Longitude
415C4-PBHL	0.00	0.00	12,300.00	-178.90	625.75	7,251,921.63	1,968,269.56	40° 13' 20.98 N	110° 19' 33.00 W
- hit/miss target									
- Shape									
- plan misses target center by 0.15ft at 12337.31ft MD (12300.00 TVD, -178.96 N, 625.89 E)									
- Point									



Nabors Corporate Services Planning Report



Database:	RyanUS R5000	Local Co-ordinate Reference:	Well 4-15C4
Company:	EP Energy E&P Company, L.P.	TVD Reference:	WELL @ 5996.00ft (Original Well Elev)
Project:	Duchesne Co, UT	MD Reference:	WELL @ 5996.00ft (Original Well Elev)
Site:	Cahal 4-15C4	North Reference:	True
Well:	4-15C4	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #1		

Casing Points					
Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")	
2,000.00	2,000.00	9 5/8"	9-5/8	12-1/4	
9,237.31	9,200.00	7"	7	8-3/4	
12,337.31	12,300.00	5"	5	6	

Formations					
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
1,900.00	1,900.00	Base MSGW		0.00	
4,207.84	4,191.00	Green River (GRRV)		0.00	
5,076.97	5,051.00	Green River (GRTN1)		0.00	
6,034.19	6,001.00	Mahogany Bench		0.00	
7,325.96	7,291.00	Lower Green River		0.00	
9,168.30	9,131.00	Wasatch		0.00	

Plan Annotations					
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates			
		+N/-S (ft)	+E/-W (ft)	Comment	
2,050.00	2,050.00	0.00	0.00	Start Build 1.00	
5,500.41	5,470.00	-16.54	57.84	Start DLS 1.00 TFO 180.00	
8,937.17	8,900.00	-120.60	421.84	Start DLS 1.00 TFO 180.00	
12,337.31	12,300.00	-134.98	472.13	TD at 12337.31	



February 11, 2015

State of Utah Division of Oil, Gas and Mining
Attn: Mr. Brad Hill, Oil & Gas Permitting Manager
1594 West North Temple, Suite 1210
Salt Lake City, Utah 84114-5801

RE: Notice of Directional Well
Application for Permit to Drill
CAHAL 4-15C4
SHL: 1,800' FNL & 1,075' FWL; BHL: 2,000' FNL & 1,700' FWL
SW¼NW¼ of Section 15, Township 3 South, Range 4 West
Duchesne County, Utah

Dear Mr. Hill:

In accordance with the rules and regulations of the State of Utah, EP Energy E&P Company, L.P. ("EP Energy") is preparing to submit an Application for Permit to Drill ("APD") for the proposed CAHAL 4-15C4 ("Well") to the Utah Division of Oil, Gas & Mining ("UDOGM"). Concurrently with the filing of the APD for the Well, this *Notice of Directional Well* letter hereby serves as formal, written notice to UDOGM as required under Oil & Gas Conservation Rule R649-3-11, which pertains to the Location and Siting of Directional Wells.

- The Well is being drilled in Section 15, Township 3 South, Range 4 West, Duchesne County, Utah, which is subject to that Order, Docket No 2014-035, Cause No. 139-124, dated November 6, 2014 ("Spacing Order") that established 640 acre sectional drilling units for the Lower Green River-Wasatch formations. The Spacing Order further provides drilling up to eight (8) producing Lower Green River-Wasatch wells, whether vertical, horizontal, or a combination of both in each drilling unit. The locating and siting requirements set forth in Order 139-124 and incorporated into the Spacing Order provide that permitted wells shall be no closer than 990 feet from an existing unit well drilled to, completed in, and producing from the Spaced Intervals and no closer than 660 feet from the drilling unit (section) boundary.
- Due to circumstances outside of EP Energy's control, we are required to directionally drill the Well in order to achieve a more reasonable and optimal bottom hole location. However, none of the portions of the wellbore are closer than 660' from the Section Line boundaries of Section 15, Township 3 South, Range 4 West. In addition, EP Energy certifies that, unless first obtaining an exception to the locating and siting requirements of the Spacing Order, it will not perforate any portion of the Well at a point closer than 660' from the drilling unit boundary.

- EP Energy further certifies that there are not any unleased mineral interest owners that have not already executed an oil and gas lease and/or executed operating agreements with EP Energy under all tracts within 460' of the proposed wellbore.

If you have any further questions, please feel free to contact me at your convenience using the phone number and/or email address below.

Very truly yours,

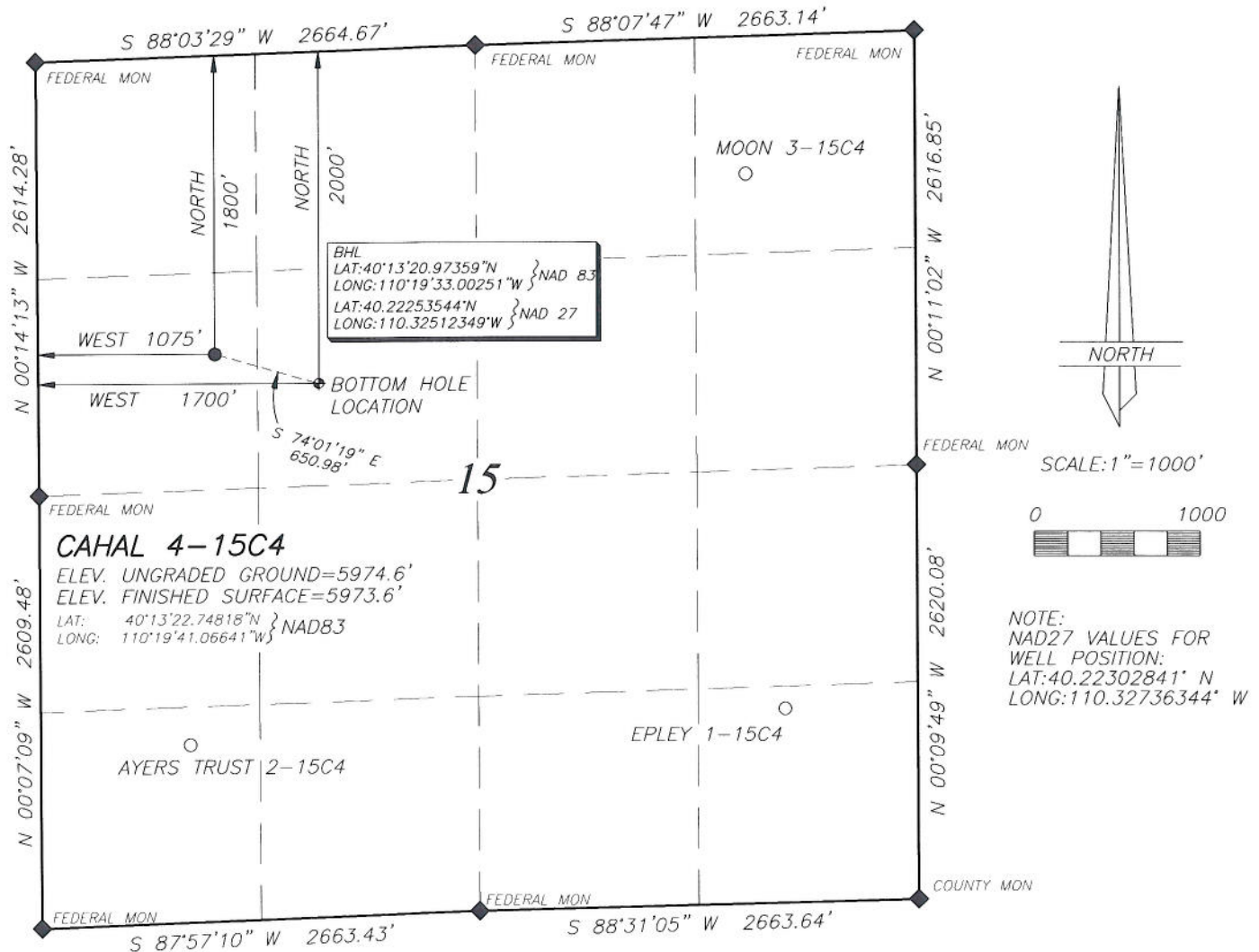
A handwritten signature in blue ink, appearing to read "John DeWitt, Jr.", with a stylized flourish at the end.

John DeWitt, Jr.

EP Energy E&P Company, L.P.
Staff Landman
1001 Louisiana Street, Suite 2523D
Houston, Texas 77002
Office: (713) 997-2620
John.DeWitt@EPEnergy.com

EP ENERGY E&P COMPANY, L.P.**WELL LOCATION****CAHAL 4-15C4**

LOCATED IN THE SW $\frac{1}{4}$ OF THE NW $\frac{1}{4}$ OF
SECTION 15, T3S, R4W, U.S.B.&M.
DUCHESNE COUNTY, UTAH

**LEGEND AND NOTES**

◆ CORNER MONUMENTS FOUND AND USED
BY THIS SURVEY

THE GENERAL LAND OFFICE (G.L.O.) PLAT WAS
USED FOR REFERENCE AND CALCULATIONS AS
WAS THE U.S.G.S. MAP

THIS SURVEY WAS PERFORMED USING GLOBAL
POSITIONING SYSTEM PROCEDURES AND EQUIPMENT

THE BASIS OF BEARINGS IS GEODETIC NORTH DERIVED
FROM G.P.S. OBSERVATIONS AT THE SECTION
CORNER LOCATED AT LAT. 40°15'22.90258\"N AND
LONG. 110°23'21.19760\"W USING THE UTAH
STATE G.P.S. VIRTUAL REFERENCE STATION CONTROL
NETWORK MAINTAINED AND OPERATED BY THE
AUTOMATED GEOGRAPHIC REFERENCE CENTER

BASIS OF ELEVATIONS: NAVD 88 DATUM USING
THE UTAH REFERENCE NETWORK CONTROL SYSTEM

REV 10 FEB 2015
REV 17 MAR 2014

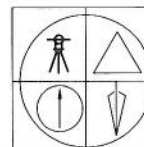
10 OCT 2013 01-128-457

SURVEYOR'S CERTIFICATE

I HEREBY CERTIFY THAT THIS PLAT WAS PREPARED FROM THE FIELD
NOTES AND ELECTRONIC DATA COLLECTOR FILES OF AN ACTUAL
SURVEY PERFORMED BY ME, OR UNDER MY PERSONAL SUPERVISION,
DURING WHICH THE SHOWN MONUMENTS WERE FOUND OR REESTABLISHED.



JERRY D. ALLRED, PROFESSIONAL LAND SURVEYOR,
CERTIFICATE NO. 148951 (UTAH)



JERRY D. ALLRED & ASSOCIATES
SURVEYING CONSULTANTS

1235 NORTH 700 EAST--P.O. BOX 975
DUCHESNE, UTAH 84021
(435) 738-5352

CONFIDENTIAL



Carol Daniels <caroldaniels@utah.gov>

SWNW S-15 T03S R04W FEE LEASE

Spud 12-1/4" surface hole

1 message

LANDRIG007 (Patterson 307) <LANDRIG007@epenergy.com>

Mon, Jun 8, 2015 at 12:36 PM

To: "alexishuefner@utah.gov" <alexishuefner@utah.gov>, "caroldaniels@utah.gov" <caroldaniels@utah.gov>, Dan Jarvis <danjarvis@utah.gov>, "Mangum, Danny R (Contractor)" <danny.mangum@epenergy.com>, "dennisingram@utah.gov" <dennisingram@utah.gov>, "Gomez, Maria S" <Maria.Gomez@epenergy.com>, "MacAfee, Bradley D" <Brad.MacAfee@epenergy.com>, "Derden, Roy Lynn (Contractor)" <Roy.Derden@epenergy.com>

Notice of spud on 12-1/4" surface hole on the Cahal 4-15C4. 4301353277

Regards,

Gary Miller

EP Energy

Patterson 307

Rig Office: 713-997-1255

EP ENERGY▲

THIS E-MAIL AND ANY MATERIALS TRANSMITTED WITH IT MAY CONTAIN CONFIDENTIAL OR PROPRIETARY MATERIAL FOR THE SOLE USE OF THE INTENDED RECIPIENT. ANY REVIEW, USE, DISTRIBUTION OR DISCLOSURE BY OTHERS IS STRICTLY PROHIBITED. IF YOU ARE NOT THE INTENDED RECIPIENT, OR AUTHORIZED TO RECEIVE THE INFORMATION FROM THE RECIPIENT, PLEASE NOTIFY THE SENDER BY REPLY E-MAIL AND DELETE ALL COPIES OF THIS MESSAGE.

6/3/2015

Subject: 24 Hour Notice of Initial Spud on the following well.

Well Name: Cahal 4-15C4

API Well Number: 43013532770000

Field: Altamont

County: Duchesne

Mineral Owner: Fee

1800 FNL 1075 FNL
SWNW 15 3S 4W CONFIDENTIAL

June 3, 2015

10:00 AM

Leon Ross Drilling

Rig #35 Bucket Rig Spudded in on the above well for EP Energy LLC.

Best Regards

Gary Miller

Rig Site Supervisor

EP Energy LLC

C: 435-823-1725

STATE OF UTAH DEPARTMENT OF NATURAL RESOURCES DIVISION OF OIL, GAS, AND MINING		FORM 9
SUNDRY NOTICES AND REPORTS ON WELLS Do not use this form for proposals to drill new wells, significantly deepen existing wells below current bottom-hole depth, reenter plugged wells, or to drill horizontal laterals. Use APPLICATION FOR PERMIT TO DRILL form for such proposals.		5. LEASE DESIGNATION AND SERIAL NUMBER: Fee
		6. IF INDIAN, ALLOTTEE OR TRIBE NAME:
		7. UNIT or CA AGREEMENT NAME:
1. TYPE OF WELL Oil Well	8. WELL NAME and NUMBER: Cahal 4-15C4	
2. NAME OF OPERATOR: EP ENERGY E&P COMPANY, L.P.		9. API NUMBER: 43013532770000
3. ADDRESS OF OPERATOR: 1001 Louisiana, Houston, TX, 77002	PHONE NUMBER: 713 997-5038 Ext	9. FIELD and POOL or WILDCAT: ALTAMONT
4. LOCATION OF WELL FOOTAGES AT SURFACE: 1800 FNL 1075 FWL QTR/QTR, SECTION, TOWNSHIP, RANGE, MERIDIAN: Qtr/Qtr: SWNW Section: 15 Township: 03.0S Range: 04.0W Meridian: U		COUNTY: DUCHESNE
		STATE: UTAH

11.

CHECK APPROPRIATE BOXES TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

TYPE OF SUBMISSION	TYPE OF ACTION		
<input checked="" type="checkbox"/> NOTICE OF INTENT Approximate date work will start: 7/22/2015	<input type="checkbox"/> ACIDIZE	<input type="checkbox"/> ALTER CASING	<input type="checkbox"/> CASING REPAIR
<input type="checkbox"/> SUBSEQUENT REPORT Date of Work Completion:	<input type="checkbox"/> CHANGE TO PREVIOUS PLANS	<input type="checkbox"/> CHANGE TUBING	<input type="checkbox"/> CHANGE WELL NAME
<input type="checkbox"/> SPUD REPORT Date of Spud:	<input type="checkbox"/> CHANGE WELL STATUS	<input type="checkbox"/> COMMINGLE PRODUCING FORMATIONS	<input type="checkbox"/> CONVERT WELL TYPE
<input type="checkbox"/> DRILLING REPORT Report Date:	<input type="checkbox"/> DEEPEN	<input type="checkbox"/> FRACTURE TREAT	<input type="checkbox"/> NEW CONSTRUCTION
	<input type="checkbox"/> OPERATOR CHANGE	<input type="checkbox"/> PLUG AND ABANDON	<input type="checkbox"/> PLUG BACK
	<input type="checkbox"/> PRODUCTION START OR RESUME	<input type="checkbox"/> RECLAMATION OF WELL SITE	<input type="checkbox"/> RECOMPLETE DIFFERENT FORMATION
	<input type="checkbox"/> REPERFORATE CURRENT FORMATION	<input type="checkbox"/> SIDETRACK TO REPAIR WELL	<input type="checkbox"/> TEMPORARY ABANDON
	<input type="checkbox"/> TUBING REPAIR	<input type="checkbox"/> VENT OR FLARE	<input type="checkbox"/> WATER DISPOSAL
	<input type="checkbox"/> WATER SHUTOFF	<input type="checkbox"/> SI TA STATUS EXTENSION	<input type="checkbox"/> APD EXTENSION
	<input type="checkbox"/> WILDCAT WELL DETERMINATION	<input checked="" type="checkbox"/> OTHER	OTHER: <input type="text" value="Initial Completion"/>

12. DESCRIBE PROPOSED OR COMPLETED OPERATIONS. Clearly show all pertinent details including dates, depths, volumes, etc.

EP plans to complete to the Wasatch. Please see attached for details.

Approved by the
July 20, 2015
Oil, Gas and Mining

Date: _____

By: Derek Duff

NAME (PLEASE PRINT) Maria S. Gomez	PHONE NUMBER 713 997-5038	TITLE Principal Regulatory Analyst
SIGNATURE N/A		DATE 7/20/2015

Stimulation Summary

	Top Perf	Btm. Perf	Gross Interval	Plug Depth	Net Perf Length	Total Shots	Perf Intervals	Type of Prop	Lbs of Prop	Lbs/ft	Lbs of 100 Mesh	Gals of HCL (15%)	BBLs of Clean H2O	BBLs of Slurry
Stage #1	11,403	11,707	304	NA	23	69	17	THS 30/50	150,000	493	3,000	5,000	3,699	4,111
Stage #2	11,040	11,334	294	11,349	23	69	17	THS 30/50	150,000	510	3,000	5,000	3,692	4,105
Stage #3	10,695	10,983	288	10,998	22	66	17	THS 30/50	150,000	521	3,000	5,000	3,686	4,098
Stage #4	10,407	10,652	245	10,667	23	69	17	TLC 30/50	150,000	612	3,000	5,000	3,681	4,082
Stage #5	10,140	10,368	228	10,383	23	69	17	TLC 30/50	150,000	658	3,000	5,000	3,677	4,077
Stage #6	9,920	10,105	185	10,120	20	60	16	TLC 30/50	150,000	811	3,000	5,000	3,673	4,073
Stage #7	9,651	9,878	227	9,893	22	66	16	TLC 30/50	150,000	661	3,000	5,000	3,668	4,068
Stage #8	9,344	9,607	263	9,622	23	69	17	TLC 30/50	150,000	570	3,000	5,000	3,662	4,063
Average per Stage			254		22	67	17		150,000	605	3,000	5,000	3,680	4,085
Totals per Well			2,034		179	537	134		1,200,000		24,000	40,000	29,438	32,678

Top Perf: 9,344
Bottom Perf: 11,707

Number of Stages 8

Tops	Depth
Liner Top:	9,025
	-
Stage #8 Plug	9,622
Stage #7 Plug	9,893
Stage #6 Plug	10,120
Stage #5 Plug	10,383
Stage #4 Plug	10,667
Stage #3 Plug	10,998
Stage #2 Plug	11,349
Stage #1 Plug	NA
Landing Collar	11,747
Float Collar	11,790
Float Collar	11,790
Packer	9,125

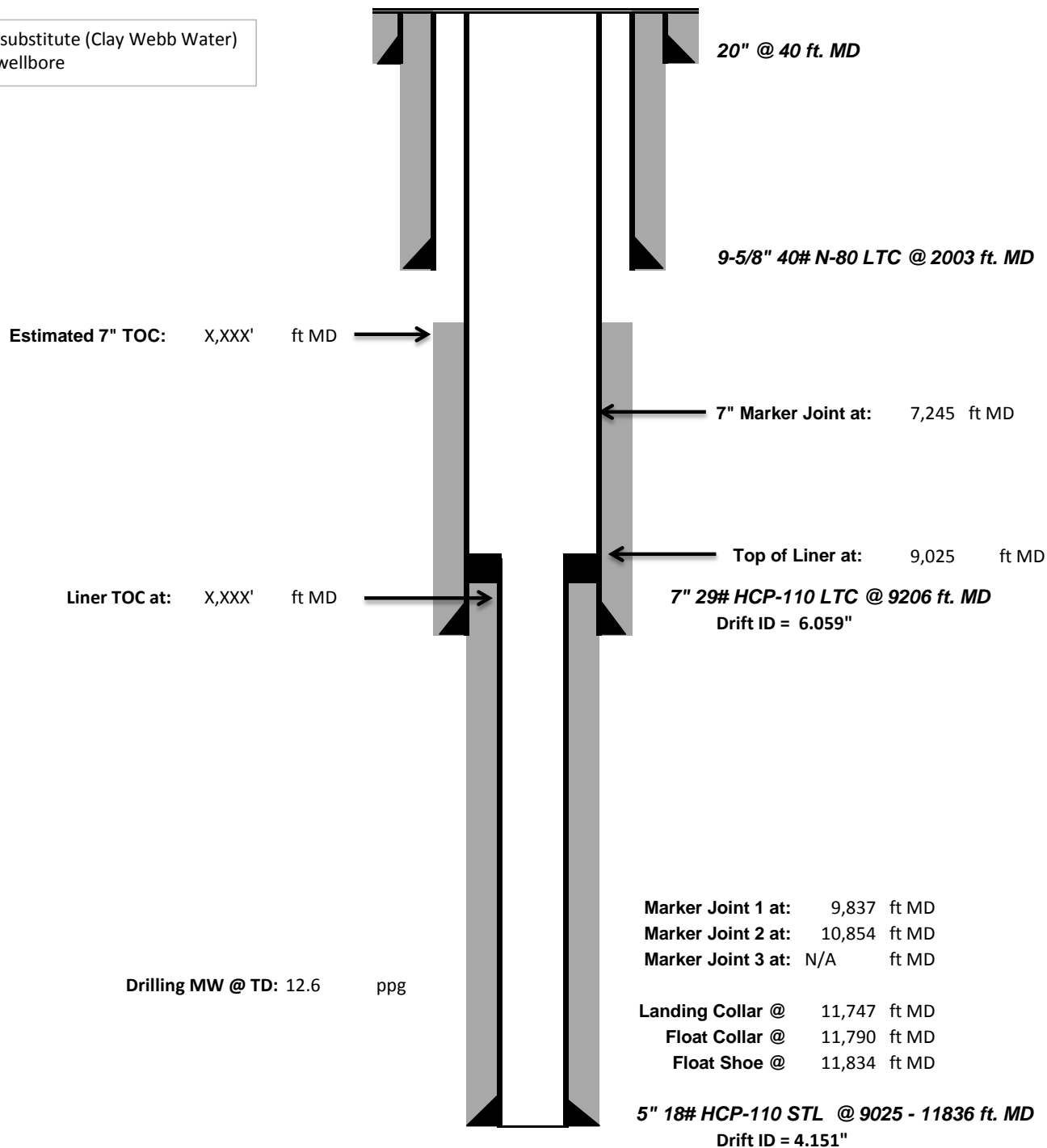


Pre-Completion Wellbore Schematic

Well Name: **Cahal 4-15C4**
Company Name: **EP Energy E&P Company, L.P.**
Field, County, State: **Altamont, Duchesne, Utah**
Surface Location: **Lat: 40 13' 22.748" N Long: 110 19' 41.066" W**
Producing Zone(s): **Wasatch**

Last Updated:
By: **Ryan Krug**
TD: **11,834**
API: **4301353277**
AFE: **161604**

8.43 ppg KCL substitute (Clay Webb Water)
water in the wellbore



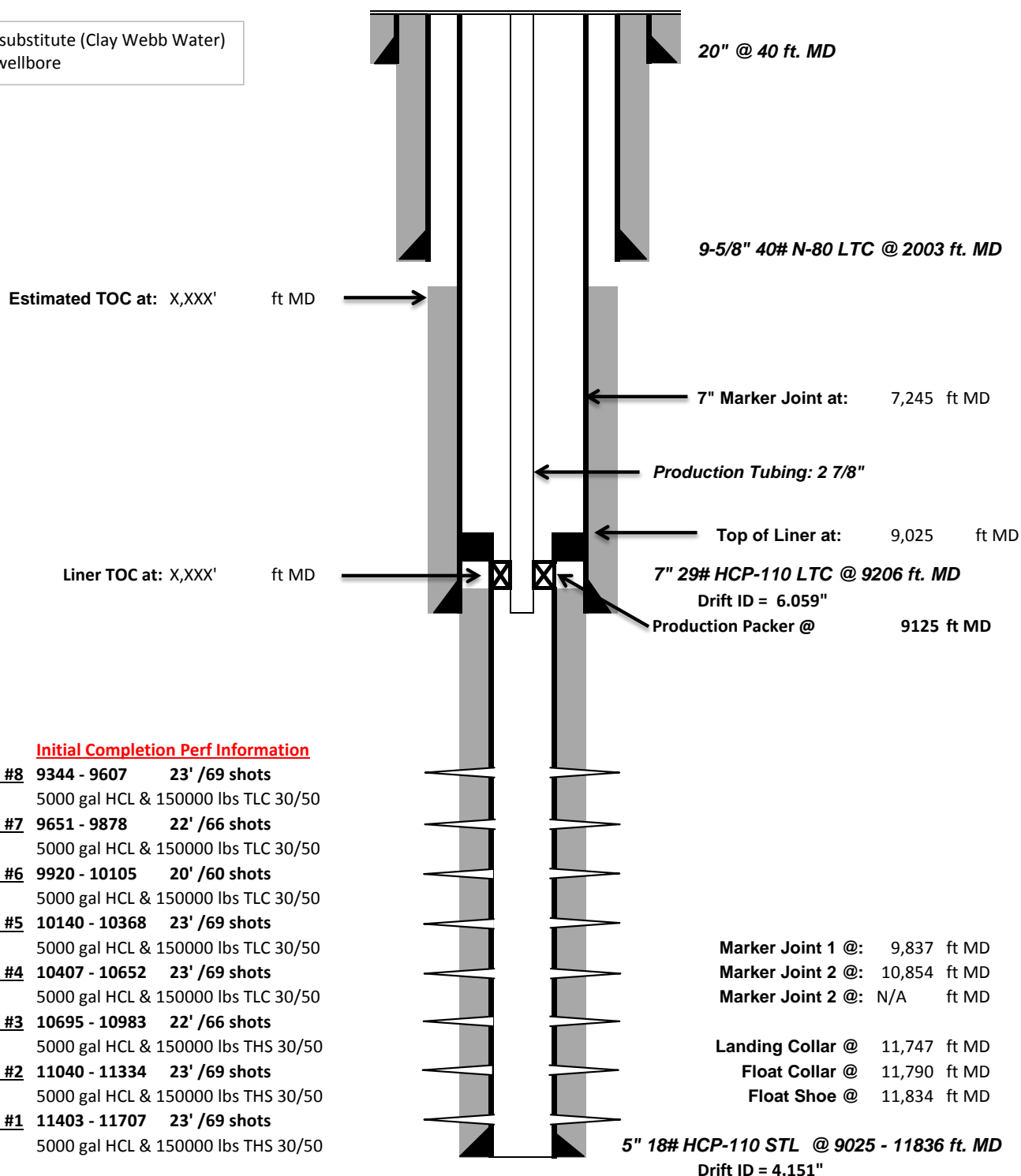


Post-Completion Wellbore Schematic

Well Name: **Cahal 4-15C4**
 Company Name: **EP Energy E&P Company, L.P.**
 Field, County, State: **Altamont, Duchesne, Utah**
 Surface Location: **Lat: 40 13' 22.748" N Long: 110 19' 41.066" W**
 Producing Zone(s): **Wasatch**

Last Updated: **7/13/2015**
 By: **Ryan Krug**
 TD: **11,834**
 API: **4301353277**
 AFE: **161604**

8.43 ppg KCL substitute (Clay Webb Water)
 water in the wellbore



STATE OF UTAH
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF OIL, GAS AND MININGAMENDED REPORT ☐ FORM 8
(highlight changes)

WELL COMPLETION OR RECOMPLETION REPORT AND LOG						5. LEASE DESIGNATION AND SERIAL NUMBER:			
						6. IF INDIAN, ALLOTTEE OR TRIBE NAME			
1a. TYPE OF WELL: OIL WELL <input type="checkbox"/> GAS WELL <input type="checkbox"/> DRY <input type="checkbox"/> OTHER _____						7. UNIT or CA AGREEMENT NAME			
b. TYPE OF WORK: NEW WELL <input type="checkbox"/> HORIZ. LATS. <input type="checkbox"/> DEEP-EN <input type="checkbox"/> RE-ENTRY <input type="checkbox"/> DIFF. RESVR. <input type="checkbox"/> OTHER _____						8. WELL NAME and NUMBER:			
2. NAME OF OPERATOR:						9. API NUMBER:			
3. ADDRESS OF OPERATOR: CITY _____ STATE _____ ZIP _____					PHONE NUMBER:	10 FIELD AND POOL, OR WILDCAT			
4. LOCATION OF WELL (FOOTAGES) AT SURFACE: AT TOP PRODUCING INTERVAL REPORTED BELOW: AT TOTAL DEPTH:						11. QTR/QTR, SECTION, TOWNSHIP, RANGE, MERIDIAN:			
						12. COUNTY		13. STATE UTAH	
14. DATE SPUDDED:		15. DATE T.D. REACHED:		16. DATE COMPLETED: ABANDONED <input type="checkbox"/> READY TO PRODUCE <input type="checkbox"/>		17. ELEVATIONS (DF, RKB, RT, GL):			
18. TOTAL DEPTH: MD _____ TVD _____		19. PLUG BACK T.D.: MD _____ TVD _____		20. IF MULTIPLE COMPLETIONS, HOW MANY? *		21. DEPTH BRIDGE MD _____ PLUG SET: TVD _____			
22. TYPE ELECTRIC AND OTHER MECHANICAL LOGS RUN (Submit copy of each)					23. WAS WELL CORED? NO <input type="checkbox"/> YES <input type="checkbox"/> (Submit analysis) WAS DST RUN? NO <input type="checkbox"/> YES <input type="checkbox"/> (Submit report) DIRECTIONAL SURVEY? NO <input type="checkbox"/> YES <input type="checkbox"/> (Submit copy)				
24. CASING AND LINER RECORD (Report all strings set in well)									
HOLE SIZE	SIZE/GRADE	WEIGHT (#/ft.)	TOP (MD)	BOTTOM (MD)	STAGE CEMENTER DEPTH	CEMENT TYPE & NO. OF SACKS	SLURRY VOLUME (BBL)	CEMENT TOP **	AMOUNT PULLED
25. TUBING RECORD									
SIZE	DEPTH SET (MD)	PACKER SET (MD)	SIZE	DEPTH SET (MD)	PACKER SET (MD)	SIZE	DEPTH SET (MD)	PACKER SET (MD)	
26. PRODUCING INTERVALS					27. PERFORATION RECORD				
FORMATION NAME	TOP (MD)	BOTTOM (MD)	TOP (TVD)	BOTTOM (TVD)	INTERVAL (Top/Bot - MD)	SIZE	NO. HOLES	PERFORATION STATUS	
(A)								Open <input type="checkbox"/>	Squeezed <input type="checkbox"/>
(B)								Open <input type="checkbox"/>	Squeezed <input type="checkbox"/>
(C)								Open <input type="checkbox"/>	Squeezed <input type="checkbox"/>
(D)								Open <input type="checkbox"/>	Squeezed <input type="checkbox"/>
28. ACID, FRACTURE, TREATMENT, CEMENT SQUEEZE, ETC. See attached for further information on #27 & #28.									
DEPTH INTERVAL		AMOUNT AND TYPE OF MATERIAL							
29. ENCLOSED ATTACHMENTS: All logs are submitted to UDOGM by vendor.								30. WELL STATUS:	
<input type="checkbox"/> ELECTRICAL/MECHANICAL LOGS				<input type="checkbox"/> GEOLOGIC REPORT		<input type="checkbox"/> DST REPORT		<input type="checkbox"/> DIRECTIONAL SURVEY	
<input type="checkbox"/> SUNDRY NOTICE FOR PLUGGING AND CEMENT VERIFICATION				<input type="checkbox"/> CORE ANALYSIS		<input type="checkbox"/> OTHER: _____			

31. INITIAL PRODUCTION**INTERVAL A (As shown in item #26)**

DATE FIRST PRODUCED:		TEST DATE:		HOURS TESTED:		TEST PRODUCTION RATES: →	OIL – BBL:	GAS – MCF:	WATER – BBL:	PROD. METHOD:
CHOKE SIZE:	TBG. PRESS.	CSG. PRESS.	API GRAVITY	BTU – GAS	GAS/OIL RATIO	24 HR PRODUCTION RATES: →	OIL – BBL:	GAS – MCF:	WATER – BBL:	INTERVAL STATUS:

INTERVAL B (As shown in item #26)

DATE FIRST PRODUCED:		TEST DATE:		HOURS TESTED:		TEST PRODUCTION RATES: →	OIL – BBL:	GAS – MCF:	WATER – BBL:	PROD. METHOD:
CHOKE SIZE:	TBG. PRESS.	CSG. PRESS.	API GRAVITY	BTU – GAS	GAS/OIL RATIO	24 HR PRODUCTION RATES: →	OIL – BBL:	GAS – MCF:	WATER – BBL:	INTERVAL STATUS:

INTERVAL C (As shown in item #26)

DATE FIRST PRODUCED:		TEST DATE:		HOURS TESTED:		TEST PRODUCTION RATES: →	OIL – BBL:	GAS – MCF:	WATER – BBL:	PROD. METHOD:
CHOKE SIZE:	TBG. PRESS.	CSG. PRESS.	API GRAVITY	BTU – GAS	GAS/OIL RATIO	24 HR PRODUCTION RATES: →	OIL – BBL:	GAS – MCF:	WATER – BBL:	INTERVAL STATUS:

INTERVAL D (As shown in item #26)

DATE FIRST PRODUCED:		TEST DATE:		HOURS TESTED:		TEST PRODUCTION RATES: →	OIL – BBL:	GAS – MCF:	WATER – BBL:	PROD. METHOD:
CHOKE SIZE:	TBG. PRESS.	CSG. PRESS.	API GRAVITY	BTU – GAS	GAS/OIL RATIO	24 HR PRODUCTION RATES: →	OIL – BBL:	GAS – MCF:	WATER – BBL:	INTERVAL STATUS:

32. DISPOSITION OF GAS (Sold, Used for Fuel, Vented, Etc.)**33. SUMMARY OF POROUS ZONES (Include Aquifers):**

Show all important zones of porosity and contents thereof: Cored intervals and all drill-stem tests, including depth interval tested, cushion used, time tool open, flowing and shut-in pressures and recoveries.

34. FORMATION (Log) MARKERS:

Formation	Top (MD)	Bottom (MD)	Descriptions, Contents, etc.	Name	Top (Measured Depth)

35. ADDITIONAL REMARKS (Include plugging procedure)

36. I hereby certify that the foregoing and attached information is complete and correct as determined from all available records.

NAME (PLEASE PRINT) _____ TITLE _____

SIGNATURE _____ DATE _____

This report must be submitted within 30 days of

- completing or plugging a new well
- drilling horizontal laterals from an existing well bore
- recompleting to a different producing formation
- reentering a previously plugged and abandoned well
- significantly deepening an existing well bore below the previous bottom-hole depth
- drilling hydrocarbon exploratory holes, such as core samples and stratigraphic tests

* ITEM 20: Show the number of completions if production is measured separately from two or more formations.

** ITEM 24: Cement Top – Show how reported top(s) of cement were determined (circulated (CIR), calculated (CAL), cement bond log (CBL), temperature survey (TS)).

Send to: Utah Division of Oil, Gas and Mining
1594 West North Temple, Suite 1210
Box 145801
Salt Lake City, Utah 84114-5801

Phone: 801-538-5340

Fax: 801-359-3940

Attachment to Well Completion Report**Form 8 Dated August 25, 2015****Well Name: Cahal 4-15C4****Items #27 and #28 Continued****27. Perforation Record**

Interval (Top/Bottom – MD)	Size	No. of Holes	Perf. Status
10133'-10362'	.38	69	Open
9912'-10102'	.38	60	Open
9640'-9867'	.38	66	Open
9334'-9595'	.38	69	Open

28. Acid, Fracture, Treatment, Cement Squeeze, Etc.

Depth Interval	Amount and Type of Material
10403'-10646'	5000 gal 15% HCL acid, 3000# 100 mesh, 150000# 30/50 TLC
10133'-10362'	5000 gal 15% HCL acid, 3000# 100 mesh, 150300# 30/50 TLC
9912'-10102'	5000 gal 15% HCL acid, 3000# 100 mesh, 150400# 30/50 TLC
9640'-9867'	5000 gal 15% HCL acid, 3000# 100 mesh, 149200# 30/50 TLC
9334'-9595'	55000 gal 15% HCL acid, 3030# 100 mesh, 28670# 30/50 TLC



Company: EP Energy
Well: Cahal 4-15C4
Location: Duchesne, UT
Rig: Patterson 307

Job Number:
Mag Decl.:
Dir Driller:
MWD Eng:

Calculation Method Minimum Curvature
Proposed Azimuth 0.00
Depth Reference KB
Tie Into: Gyro/MWD

Survey Number	Survey Depth (ft)	Inclination (deg)	Azimuth (deg)	Course Length (ft)	True Vertical Depth (ft)	Vertical Section (ft)	Coordinates		Closure		Dogleg Severity (d/100')	Build Rate (d/100')	Walk Rate (d/100')
							N/S (ft)	E/W (ft)	Distance (ft)	Direction Azimuth			
Tie In	0.00	0.00	0.00										
1	100.00	0.25	1.70	100.00	100.00	0.22	0.22 N	0.01 E	0.22	1.70	0.25	0.25	1.70
2	200.00	0.45	49.70	100.00	200.00	0.69	0.69 N	0.31 E	0.76	24.31	0.34	0.20	48.00
3	300.00	0.75	30.43	100.00	299.99	1.51	1.51 N	0.95 E	1.78	32.00	0.36	0.30	-19.27
4	400.00	0.72	29.14	100.00	399.98	2.63	2.63 N	1.58 E	3.07	31.08	0.03	-0.03	-1.29
5	500.00	0.72	21.69	100.00	499.98	3.76	3.76 N	2.12 E	4.31	29.44	0.09	0.00	-7.45
6	600.00	0.61	15.87	100.00	599.97	4.85	4.85 N	2.50 E	5.45	27.25	0.13	-0.11	-5.82
7	700.00	0.50	26.30	100.00	699.96	5.75	5.75 N	2.84 E	6.41	26.25	0.15	-0.11	10.42
8	800.00	0.31	16.00	100.00	799.96	6.41	6.41 N	3.10 E	7.12	25.86	0.20	-0.19	-10.30
9	900.00	0.19	297.25	100.00	899.96	6.74	6.74 N	3.03 E	7.39	24.19	0.33	-0.12	281.26
10	1000.00	0.34	162.16	100.00	999.96	6.54	6.54 N	2.97 E	7.18	24.43	0.49	0.15	-135.09
11	1100.00	0.45	189.32	100.00	1099.96	5.87	5.87 N	3.00 E	6.59	27.05	0.21	0.11	27.16
12	1200.00	0.43	135.35	100.00	1199.96	5.21	5.21 N	3.20 E	6.12	31.54	0.40	-0.02	-53.97
13	1300.00	0.25	43.27	100.00	1299.95	5.10	5.10 N	3.61 E	6.25	35.31	0.51	-0.19	-92.08
14	1400.00	0.60	242.99	100.00	1399.95	5.02	5.02 N	3.30 E	6.01	33.29	0.83	0.35	199.72
15	1500.00	0.69	186.70	100.00	1499.95	4.19	4.19 N	2.76 E	5.02	33.40	0.61	0.09	-56.29
16	1600.00	0.22	172.43	100.00	1599.94	3.41	3.41 N	2.72 E	4.36	38.54	0.48	-0.47	-14.27
17	1700.00	0.26	236.81	100.00	1699.94	3.11	3.11 N	2.56 E	4.02	39.48	0.25	0.04	64.38
18	1800.00	0.46	212.64	100.00	1799.94	2.65	2.65 N	2.16 E	3.42	39.16	0.25	0.20	-24.17
19	1900.00	0.70	221.08	100.00	1899.94	1.85	1.85 N	1.54 E	2.41	39.74	0.26	0.25	8.43
20	1945.00	0.82	211.19	45.00	1944.93	1.37	1.37 N	1.19 E	1.82	41.05	0.39	0.26	-21.98
21	2118.00	1.10	134.60	173.00	2117.91	-0.86	0.86 S	1.73 E	1.93	116.30	0.70	0.16	-44.27
22	2214.00	2.60	102.40	96.00	2213.86	-1.97	1.97 S	4.52 E	4.93	113.58	1.84	1.56	-33.54
23	2309.00	3.50	103.20	95.00	2308.73	-3.10	3.10 S	9.44 E	9.94	108.15	0.95	0.95	0.84
24	2404.00	4.70	90.00	95.00	2403.49	-3.76	3.76 S	16.16 E	16.59	103.09	1.60	1.26	-13.89
25	2499.00	5.40	90.20	95.00	2498.12	-3.77	3.77 S	24.52 E	24.81	98.75	0.74	0.74	0.21
26	2594.00	6.60	91.00	95.00	2592.59	-3.89	3.89 S	34.45 E	34.67	96.43	1.27	1.26	0.84
27	2688.00	7.10	89.30	94.00	2685.92	-3.91	3.91 S	45.66 E	45.83	94.89	0.57	0.53	-1.81
28	2784.00	8.40	89.00	96.00	2781.04	-3.71	3.71 S	58.61 E	58.72	93.63	1.35	1.35	-0.31
29	2879.00	8.00	88.40	95.00	2875.07	-3.41	3.41 S	72.15 E	72.23	92.70	0.43	-0.42	-0.63
30	2975.00	7.60	91.70	96.00	2970.18	-3.41	3.41 S	85.17 E	85.24	92.29	0.63	-0.42	3.44
31	3070.00	8.60	88.00	95.00	3064.24	-3.35	3.35 S	98.55 E	98.61	91.95	1.19	1.05	-3.89
32	3164.00	8.00	88.00	94.00	3157.25	-2.87	2.87 S	112.11 E	112.15	91.47	0.64	-0.64	0.00
33	3259.00	7.30	89.20	95.00	3251.41	-2.56	2.56 S	124.76 E	124.78	91.18	0.76	-0.74	1.26
34	3355.00	8.30	88.20	96.00	3346.52	-2.26	2.26 S	137.78 E	137.80	90.94	1.05	1.04	-1.04
35	3450.00	8.60	88.90	95.00	3440.48	-1.90	1.90 S	151.74 E	151.75	90.72	0.33	0.32	0.74



Company: EP Energy
Well: Cahal 4-15C4
Location: Duchesne, UT
Rig: Patterson 307

Job Number: _____
Mag Decl.: _____
Dir Driller: _____
MWD Eng: _____

Calculation Method Minimum Curvature
Proposed Azimuth 0.00
Depth Reference KB
Tie Into: Gyro/MWD

Survey Number	Survey Depth (ft)	Inclination (deg)	Azimuth (deg)	Course Length (ft)	True Vertical Depth (ft)	Vertical Section (ft)	Coordinates			Closure		Dogleg Severity (d/100')	Build Rate (d/100')	Walk Rate (d/100')	
							N/S (ft)		E/W (ft)	Distance (ft)	Direction Azimuth				
36	3546.00	8.00	88.10	96.00	3535.48	-1.55	1.55	S	165.59	E	165.60	90.53	0.64	-0.63	-0.83
37	3641.00	8.60	91.80	95.00	3629.48	-1.55	1.55	S	179.30	E	179.30	90.50	0.85	0.63	3.89
38	3737.00	7.90	90.40	96.00	3724.49	-1.82	1.82	S	193.07	E	193.08	90.54	0.76	-0.73	-1.46
39	3832.00	8.90	90.60	95.00	3818.47	-1.94	1.94	S	206.94	E	206.95	90.54	1.05	1.05	0.21
40	3928.00	8.00	91.10	96.00	3913.43	-2.15	2.15	S	221.05	E	221.06	90.56	0.94	-0.94	0.52
41	4024.00	7.80	95.60	96.00	4008.52	-2.91	2.91	S	234.21	E	234.23	90.71	0.68	-0.21	4.69
42	4119.00	8.40	91.90	95.00	4102.57	-3.77	3.77	S	247.56	E	247.59	90.87	0.84	0.63	-3.89
43	4215.00	7.50	92.80	96.00	4197.64	-4.31	4.31	S	260.83	E	260.86	90.95	0.95	-0.94	0.94
44	4311.00	8.60	94.80	96.00	4292.70	-5.22	5.22	S	274.24	E	274.29	91.09	1.18	1.15	2.08
45	4407.00	9.00	89.10	96.00	4387.57	-5.70	5.70	S	288.90	E	288.96	91.13	1.00	0.42	-5.94
46	4501.00	7.80	92.90	94.00	4480.56	-5.91	5.91	S	302.62	E	302.68	91.12	1.41	-1.28	4.04
47	4597.00	7.70	88.50	96.00	4575.68	-6.07	6.07	S	315.56	E	315.62	91.10	0.63	-0.10	-4.58
48	4692.00	8.20	91.30	95.00	4669.77	-6.06	6.06	S	328.69	E	328.75	91.06	0.67	0.53	2.95
49	4788.00	8.20	89.80	96.00	4764.79	-6.19	6.19	S	342.38	E	342.44	91.04	0.22	0.00	-1.56
50	4884.00	8.00	90.90	96.00	4859.83	-6.27	6.27	S	355.91	E	355.97	91.01	0.26	-0.21	1.15
51	4980.00	9.00	91.80	96.00	4954.78	-6.61	6.61	S	370.10	E	370.15	91.02	1.05	1.04	0.94
52	5076.00	7.00	92.90	96.00	5049.84	-7.14	7.14	S	383.44	E	383.51	91.07	2.09	-2.08	1.15
53	5171.00	7.50	93.40	95.00	5144.08	-7.80	7.80	S	395.41	E	395.49	91.13	0.53	0.53	0.53
54	5267.00	7.60	91.80	96.00	5239.24	-8.37	8.37	S	408.01	E	408.10	91.18	0.24	0.10	-1.67
55	5363.00	8.00	90.80	96.00	5334.36	-8.67	8.67	S	421.04	E	421.13	91.18	0.44	0.42	-1.04
56	5459.00	8.10	85.20	96.00	5429.41	-8.19	8.19	S	434.46	E	434.54	91.08	0.82	0.10	-5.83
57	5555.00	8.60	89.50	96.00	5524.40	-7.56	7.56	S	448.38	E	448.44	90.97	0.83	0.52	4.48
58	5650.00	6.40	91.30	95.00	5618.58	-7.62	7.62	S	460.77	E	460.84	90.95	2.33	-2.32	1.89
59	5746.00	6.00	98.00	96.00	5714.02	-8.44	8.44	S	471.09	E	471.17	91.03	0.86	-0.42	6.98
60	5841.00	6.50	101.70	95.00	5808.45	-10.22	10.22	S	481.27	E	481.38	91.22	0.68	0.53	3.89
61	5937.00	5.30	117.10	96.00	5903.95	-13.35	13.35	S	490.54	E	490.72	91.56	2.06	-1.25	16.04
62	6032.00	6.00	120.80	95.00	5998.49	-17.89	17.89	S	498.71	E	499.03	92.05	0.83	0.74	3.89
63	6127.00	5.20	132.60	95.00	6093.03	-23.34	23.34	S	506.15	E	506.68	92.64	1.47	-0.84	12.42
64	6223.00	4.70	135.20	96.00	6188.68	-29.08	29.08	S	512.12	E	512.95	93.25	0.57	-0.52	2.71
65	6318.00	4.00	141.60	95.00	6283.40	-34.44	34.44	S	516.92	E	518.07	93.81	0.90	-0.74	6.74
66	6414.00	3.60	145.00	96.00	6379.19	-39.53	39.53	S	520.73	E	522.23	94.34	0.48	-0.42	3.54
67	6509.00	3.90	135.00	95.00	6473.99	-44.26	44.26	S	524.73	E	526.59	94.82	0.76	0.32	-10.53
68	6605.00	3.60	137.80	96.00	6569.78	-48.80	48.80	S	529.06	E	531.30	95.27	0.37	-0.31	2.92
69	6700.00	4.60	131.30	95.00	6664.54	-53.52	53.52	S	533.92	E	536.60	95.72	1.16	1.05	-6.84
70	6795.00	4.30	135.70	95.00	6759.25	-58.59	58.59	S	539.27	E	542.45	96.20	0.48	-0.32	4.63
71	6890.00	3.90	143.10	95.00	6854.01	-63.72	63.72	S	543.70	E	547.42	96.68	0.70	-0.42	7.79
72	6986.00	3.40	129.60	96.00	6949.82	-68.14	68.14	S	547.85	E	552.08	97.09	1.03	-0.52	-14.06



Company: EP Energy
Well: Cahal 4-15C4
Location: Duchesne, UT
Rig: Patterson 307

Job Number: _____
Mag Decl.: _____
Dir Driller: _____
MWD Eng: _____

Calculation Method Minimum Curvature
Proposed Azimuth 0.00
Depth Reference KB
Tie Into: Gyro/MWD

Survey Number	Survey Depth (ft)	Inclination (deg)	Azimuth (deg)	Course Length (ft)	True Vertical Depth (ft)	Vertical Section (ft)	Coordinates		Closure		Dogleg Severity (d/100')	Build Rate (d/100')	Walk Rate (d/100')
							N/S (ft)	E/W (ft)	Distance (ft)	Direction Azimuth			
73	7081.00	3.20	142.10	95.00	7044.66	-72.03	72.03 S	551.65 E	556.34	97.44	0.78	-0.21	13.16
74	7176.00	3.70	131.60	95.00	7139.49	-76.16	76.16 S	555.57 E	560.77	97.81	0.85	0.53	-11.05
75	7271.00	3.60	140.70	95.00	7234.30	-80.50	80.50 S	559.76 E	565.52	98.18	0.62	-0.11	9.58
76	7365.00	3.40	147.20	94.00	7328.12	-85.13	85.13 S	563.13 E	569.53	98.60	0.47	-0.21	6.91
77	7461.00	3.80	132.50	96.00	7423.94	-89.67	89.67 S	567.02 E	574.07	98.99	1.04	0.42	-15.31
78	7556.00	3.70	142.30	95.00	7518.73	-94.22	94.22 S	571.22 E	578.94	99.37	0.68	-0.11	10.32
79	7652.00	3.60	148.90	96.00	7614.54	-99.26	99.26 S	574.67 E	583.18	99.80	0.45	-0.10	6.87
80	7747.00	3.90	146.10	95.00	7709.33	-104.49	104.49 S	578.01 E	587.38	100.25	0.37	0.32	-2.95
81	7843.00	3.90	155.80	96.00	7805.11	-110.18	110.18 S	581.17 E	591.52	100.73	0.69	0.00	10.10
82	7938.00	3.80	161.70	95.00	7899.90	-116.11	116.11 S	583.48 E	594.92	101.25	0.43	-0.11	6.21
83	8034.00	3.80	168.90	96.00	7995.69	-122.26	122.26 S	585.09 E	597.73	101.80	0.50	0.00	7.50
84	8130.00	3.70	172.20	96.00	8091.48	-128.45	128.45 S	586.13 E	600.04	102.36	0.25	-0.10	3.44
85	8224.00	3.80	173.00	94.00	8185.28	-134.54	134.54 S	586.92 E	602.14	102.91	0.12	0.11	0.85
86	8319.00	3.80	169.80	95.00	8280.07	-140.77	140.77 S	587.86 E	604.48	103.47	0.22	0.00	-3.37
87	8415.00	2.90	160.70	96.00	8375.91	-146.19	146.19 S	589.23 E	607.09	103.93	1.09	-0.94	-9.48
88	8510.00	3.60	161.80	95.00	8470.76	-151.29	151.29 S	590.95 E	610.01	104.36	0.74	0.74	1.16
89	8605.00	3.20	168.60	95.00	8565.59	-156.72	156.72 S	592.41 E	612.79	104.82	0.60	-0.42	7.16
90	8700.00	3.20	173.00	95.00	8660.44	-161.95	161.95 S	593.25 E	614.96	105.27	0.26	0.00	4.63
91	8796.00	3.00	183.00	96.00	8756.30	-167.12	167.12 S	593.45 E	616.53	105.73	0.60	-0.21	10.42
92	8892.00	1.90	178.70	96.00	8852.21	-171.22	171.22 S	593.35 E	617.57	106.10	1.16	-1.15	-4.48
93	8987.00	1.40	202.10	95.00	8947.17	-173.87	173.87 S	592.95 E	617.92	106.34	0.87	-0.53	24.63
94	9082.00	1.90	203.80	95.00	9042.13	-176.39	176.39 S	591.88 E	617.61	106.59	0.53	0.53	1.79
95	9150.00	1.40	214.00	68.00	9110.11	-178.11	178.11 S	590.96 E	617.22	106.77	0.85	-0.74	15.00
96	9200.00	1.60	220.03	50.00	9160.09	-179.15	179.15 S	590.17 E	616.76	106.89	0.51	0.40	12.05
97	9300.00	1.75	189.07	100.00	9260.05	-181.73	181.73 S	589.03 E	616.43	107.15	0.91	0.15	-30.95
98	9400.00	2.60	188.97	100.00	9359.97	-185.48	185.48 S	588.44 E	616.98	107.49	0.85	0.85	-0.10
99	9500.00	2.65	183.77	100.00	9459.87	-190.03	190.03 S	587.93 E	617.88	107.91	0.24	0.05	-5.20
100	9600.00	2.72	178.87	100.00	9559.76	-194.71	194.71 S	587.83 E	619.24	108.33	0.24	0.06	-4.90
101	9700.00	3.39	184.81	100.00	9659.62	-200.03	200.03 S	587.63 E	620.74	108.80	0.75	0.68	5.94
102	9800.00	3.06	179.38	100.00	9759.46	-205.65	205.65 S	587.41 E	622.36	109.29	0.45	-0.33	-5.43
103	9900.00	3.29	183.68	100.00	9859.30	-211.18	211.18 S	587.25 E	624.07	109.78	0.32	0.22	4.30
104	10000.00	3.27	179.50	100.00	9959.14	-216.89	216.89 S	587.09 E	625.87	110.28	0.24	-0.02	-4.18
105	10100.00	3.34	179.77	100.00	10058.98	-222.65	222.65 S	587.13 E	627.93	110.77	0.08	0.08	0.27
106	10200.00	3.43	179.35	100.00	10158.80	-228.56	228.56 S	587.18 E	630.09	111.27	0.09	0.09	-0.42
107	10300.00	3.28	174.38	100.00	10258.63	-234.39	234.39 S	587.49 E	632.52	111.75	0.33	-0.15	-4.97
108	10400.00	3.56	180.45	100.00	10358.45	-240.35	240.35 S	587.75 E	634.99	112.24	0.46	0.29	6.06
109	10500.00	3.59	181.79	100.00	10458.26	-246.58	246.58 S	587.62 E	637.26	112.76	0.09	0.02	1.34



Company: EP Energy
Well: Cahal 4-15C4
Location: Duchesne, UT
Rig: Patterson 307

Job Number: _____
Mag Decl.: _____
Dir Driller: _____
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Calculation Method Minimum Curvature
Proposed Azimuth 0.00
Depth Reference KB
Tie Into: Gyro/MWD

Survey Number	Survey Depth (ft)	Inclination (deg)	Azimuth (deg)	Course Length (ft)	True Vertical Depth (ft)	Vertical Section (ft)	Coordinates		Closure Distance (ft)	Direction Azimuth	Dogleg Severity (d/100')	Build Rate (d/100')	Walk Rate (d/100')
							N/S (ft)	E/W (ft)					
110	10600.00	3.53	187.36	100.00	10558.06	-252.76	252.76 S	587.13 E	639.23	113.29	0.35	-0.06	5.57
111	10700.00	3.47	184.57	100.00	10657.88	-258.83	258.83 S	586.50 E	641.07	113.81	0.18	-0.06	-2.79
112	10800.00	3.40	187.82	100.00	10757.70	-264.78	264.78 S	585.85 E	642.91	114.32	0.21	-0.07	3.25
113	10900.00	3.65	190.59	100.00	10857.51	-270.85	270.85 S	584.86 E	644.53	114.85	0.30	0.25	2.77
114	11000.00	3.50	188.67	100.00	10957.31	-276.99	276.99 S	583.82 E	646.20	115.38	0.19	-0.15	-1.92
115	11100.00	3.54	194.29	100.00	11057.13	-283.00	283.00 S	582.60 E	647.69	115.91	0.35	0.04	5.62
116	11200.00	3.29	184.63	100.00	11156.95	-288.85	288.85 S	581.61 E	649.38	116.41	0.62	-0.25	-9.66
117	11300.00	3.25	183.93	100.00	11256.79	-294.54	294.54 S	581.18 E	651.56	116.88	0.06	-0.04	-0.70
118	11400.00	3.06	185.84	100.00	11356.63	-300.03	300.03 S	580.71 E	653.64	117.32	0.22	-0.19	1.91
119	11500.00	3.48	188.77	100.00	11456.47	-305.68	305.68 S	579.98 E	655.60	117.79	0.45	0.42	2.93
120	11600.00	3.34	189.08	100.00	11556.30	-311.55	311.55 S	579.06 E	657.55	118.28	0.14	-0.14	0.31
121	11648.00	3.19	189.01	48.00	11604.22	-314.25	314.25 S	578.63 E	658.46	118.51	0.31	-0.31	-0.14
122	11836.00	3.19	189.01	188.00	11791.93	-324.59	324.59 S	576.99 E	662.02	119.36	0.00	0.00	0.00

CENTRAL DIVISION

ALTAMONT FIELD

CAHAL 4-15C4

CAHAL 4-15C4

DRILLING LAND

Operation Summary Report

Disclaimer: Although the information contained in this report is based on sound engineering practices, the copyright owner(s) does (do) not accept any responsibility whatsoever, in negligence or otherwise, for any loss or damage arising from the possession or use of the report whether in terms of correctness or otherwise. The application, therefore, by the user of this report or any part thereof, is solely at the user's own risk.

1 General

1.1 Customer Information

Company	CENTRAL DIVISION
Representative	
Address	

1.2 Well Information

Well	CAHAL 4-15C4		
Project	ALTAMONT FIELD	Site	CAHAL 4-15C4
Rig Name/No.	PATTERSON/307	Event	DRILLING LAND
Start date	6/1/2015	End date	7/8/2015
Spud Date/Time	6/20/2015	UWI	CAHAL 4-15C4
Active datum	KB @5,997.6ft (above Mean Sea Level)		
Afe No./Description	161604/54262 / CAHAL 4-15C4		

2 Summary

2.1 Operation Summary

Date	Time Start-End	Duration (hr)	Phase	Activity	Sub	OP Code	MD from (ft)	Operation
6/18/2015	6:00 6:00	24.00	MIRU	01		P	2,027.0	100% MOVED IN. 50% RU. DERRICK IS PINNED TOGETHER ON GROUND.
6/19/2015	6:00 6:00	24.00	MIRU	01		P	2,027.0	PIN AND RAISED DERRICK. RIGGED UP. INSTALLED TDU TRACK. PU TDU. RU TDU.
6/20/2015	6:00 10:00	4.00	MIRU	01		P	2,027.0	FINISHED RIG UP. PERFORMED S & E INSPECTION. BEGAN DAYWORK 1000 HRS, 06-19-2015.
	10:00 20:00	10.00	CASSURF	28		P	2,027.0	TESTED CHOKE MANIFOLD AT 250 PSI LOW, 10,000 PSI HIGH WHILE NU 11" 10M ANNULAR. FINISHED NU KILL VALVES, HCR, CHOKE LINE, ETC. WEATHERFORD TORQUED CONNECTIONS.
	20:00 2:30	6.50	CASSURF	30		P	2,027.0	MIXED SPUD MUD & DRESSED SHAKERS WHILE TESTED CASING TO 2,500 PSI FOR >30 MINUTES. TESTED ANNULAR 250 PSI LOW / 4,000 PSI HIGH AND REMAINING 11" 10M BOPE, FLOOR VALVES, ETC 250 PSI LOW / 5,000 PSI HIGH. HELD >10 MINUTES EACH TEST.
	2:30 6:00	3.50	CASSURF	28		P	2,027.0	CENTRALIZED & STABILIZED STACK. NU ROT HEAD & FLOWLINE. INSTALLED WEAR BUSHING.
6/21/2015	6:00 8:00	2.00	CASSURF	14		P	2,027.0	PUMU RYAN'S ASSEMBLY. PROTRACTOR CHECKED MM BEND. ATTEMPTED ASSY TEST.
	8:00 9:00	1.00	DRLINT1	57		N	2,027.0	MWD INOPERATIVE. TROUBLESHOT PROBLEM, ADJUSTED PARAMETERS. ADDED SECOND NM DC. RETESTED. MU 8 3/4" U616M INSERT PDC BIT.
	9:00 11:30	2.50	CASSURF	13		P	2,027.0	PUMU DCs & HWDP 5" DP FROM RACKS.
	11:30 12:00	0.50	CASSURF	31		P	2,027.0	RETESTED CASING TO 1,950 PSI AT 1/2 BBLS INCREMENTS, RECORDING DATA POINTS FOR CHART.
	12:00 13:30	1.50	CASSURF	32		P	2,027.0	DRILLED CEMENT, FE & 10' NH TO 2,037'.
	13:30 14:00	0.50	CASSURF	15		P	2,037.0	C & C MUD, PERFORMED FIT TO 15.4 PPG EMW.
	14:00 16:30	2.50	DRLINT1	07		P	2,037.0	DRILLED 2,037' - 2,270'.
	16:30 17:00	0.50	DRLINT1	12		P	2,270.0	RIG SERVICED.
	17:00 0:30	7.50	DRLINT1	47		N	2,270.0	REPAIRED RIG'S ELECTRONIC DRILLING SYSTEM.
6/22/2015	0:30 6:00	5.50	DRLINT1	07		P	2,270.0	DRILLED 2,270' - 2,850'.
	6:00 16:00	10.00	DRLINT1	07		P	2,850.0	DRILLED 2,850' - 4,171'.
	16:00 16:30	0.50	DRLINT1	12		P	4,170.0	RIG SERVICED.
	16:30 6:00	13.50	DRLINT1	07		P	4,171.0	DRILLED 4,171' - 5,400'.

2.1 Operation Summary (Continued)

Date	Time Start-End	Duratio n (hr)	Phase	Activit y	Sub	OP Code	MD from (ft)	Operation
6/23/2015	6:00 17:30	11.50	DRLINT1	07		P	5,400.0	DRILLED 5,400' - 6,568'. BEGAN MUD LOSSES AT 6,440'.
	17:30 18:00	0.50	DRLINT1	12		P	6,568.0	RIG SERVICED.
	18:00 6:00	12.00	DRLINT1	07		P	6,568.0	DRILLED 6,568' - 7,260'.
6/24/2015	6:00 14:30	8.50	DRLINT1	07		P	7,260.0	DRILL 7,260' - 7,899'.
	14:30 15:00	0.50	DRLINT1	12		P	7,899.0	RIG SERVICE.
	15:00 4:30	13.50	DRLINT1	07		P	7,899.0	DRILL 7,899' - 8,665'.
	4:30 5:00	0.50	DRLINT1	45		N	8,665.0	MUDLINE INSIDE OF ONE OF THE SUITCASES WASHED OUT. SET IN SINGLE SUIT CASE. ABLE TO RUN 1 PUMP ON THE HOLE.
	5:00 6:00	1.00	DRLINT1	50		N	8,665.0	WELL STARTED FLOWING. SHUT WELL IN. SIDPP 200 PSI. SICP 180 PSI. RAISE MUD WT. TO 10.2 PPG.
6/25/2015	6:00 11:00	5.00	DRLINT1	45		N	8,665.0	CIRCULATE 10.2 PPG MUD AROUND THROUGH CHOKE MANIFOLD. MANIFOLD TRYING TO PLUG OFF, LOSING MUD. NO GAS TO SURFACE.
	11:00 17:30	6.50	DPDCOND	07		P	8,665.0	DRILLING FROM 8665' TO 9046'
	17:30 18:00	0.50	DRLINT1	12		P	9,046.0	RIG SERVICE, HOOK UP REPAIRED MUD LINE.
	18:00 22:00	4.00	DRLINT1	07		P	9,046.0	DRILLING FROM 9046' TO 9206'. CASING POINT.
	22:00 23:30	1.50	DRLINT1	15		P	9,206.0	SIMULATE CONNECTION, PUMP SWEEP, CIRCULATE AND CONDITION MUD FOR WIPER TRIP MAX B/UP GAS 263 UNITS.
	23:30 0:30	1.00	DRLINT1	13		P	9,206.0	TRIP OUT OF HOLE TO 8357'. REAM TIGHT HOLE FROM 8600' TO 8550'.
	0:30 1:00	0.50	DRLINT1	44		N	9,206.0	WORK ON DRAW WORKS (EDS).
	1:00 2:30	1.50	DRLINT1	13		P	9,206.0	TRIP OUT OF HOLE TO 6597'.
	2:30 3:30	1.00	DRLINT1	44		P	9,206.0	WORK ON DRAW WORKS (EDS). REPLACED BROKEN WIRE.
	3:30 6:00	2.50	DRLINT1	13		P	9,206.0	PUMP SLUG & PULL OUT OF HOLE.
6/26/2015	6:00 7:30	1.50	DRLINT1	13		P	9,206.0	TRIP OUT OF HOLE TO CASING SHOE. FLOW CHECK.
	7:30 13:00	5.50	DRLINT1	13		P	9,206.0	TIH. FILL PIPE AND BREAK CIRCULATION EVERY 2500'. WASH BRIDGES AT 5580', 6029', 6800' 7010', AND 8628'. CIRCULATE BU AT 6800'.
	13:00 14:00	1.00	DRLINT1	15		P	9,206.0	CIRCULATE BU. BU GAS 4500 PASON, 4480 THIRD PARTY.
	14:00 16:00	2.00	DRLINT1	15		P	9,206.0	SHAKE OUT LCM.
	16:00 18:30	2.50	DRLINT1	14		P	9,206.0	LDDP. TO 7,215'. HOLE NOT TAKING MUD CHECK FLOW NO FLOW.
	18:30 19:30	1.00	DRLINT1	42		P	9,206.0	FILL HOLE WITH 5.5 BBLS THROUGH DRILL PIPE. WELL STARTED FLOWING MONITOR WELL FOR POSSIBLE BALLOONING FORMATION FLOWED BACK 35 BBLS AND CONTINUED TO FLOW.
	19:30 20:30	1.00	DRLINT1	15		P	9,206.0	CIRC B/UP @ 7,215' MAX GAS 5934 UNITS MUD CUT FROM 10.4 TO 9.6.
	20:30 22:30	2.00	DRLINT1	14		P	9,206.0	TRIP IN HOLE TO BOTTOM PICKING UP DRILL PIPE.
	22:30 0:00	1.50	DRLINT1	15		P	9,206.0	CIRC B/UP, MAX GAS 3277 UNITS NO FLARE, MUD CUT FROM 10.4 PPG TO 9.3 PPG.
	0:00 3:00	3.00	DRLINT1	15		P	9,206.0	SIMULATE CONNECTION & CIRC AT REDUCED RATE INCREASE MUD WT. TO 10.6 PPG. B/UP GAS 96 UNITS.
6/27/2015	3:00 6:00	3.00	DRLINT1	13		P	9,206.0	POOH LAYING DOWN DRILL PIPE. HOLE TAKING PROPER FILL.
	6:00 9:30	3.50	DRLINT1	14		P	9,206.0	LAY DOWN 5" DP
	9:30 10:30	1.00	DRLINT1	42		P	9,206.0	FLOW CHECK, WELL STATIC. REPAIRS TO ST80. TURN OFF MWD TOOL.
	10:30 15:00	4.50	DRLINT1	14		P	9,206.0	LAY DOWN 5" DP, DC'S, AND DIRECTIONAL TOOLS.
	15:00 15:30	0.50	DRLINT1	42		P	9,206.0	PULL WEAR BUSHING
	15:30 20:00	4.50	EVLINT1	22		P	9,206.0	PJSM WITH HALLIBURTON. RIG UP AND RUN ULTRA SLIM QUAD COMBO. LOG STOPPED AT 6120'. LOG OUT.

2.1 Operation Summary (Continued)

Date	Time Start-End	Duration (hr)	Phase	Activity	Sub	OP Code	MD from (ft)	Operation
	20:00 6:00	10.00	CASINT1	24		P	9,206.0	DECREASED MW TO 10.0 PPG WHILE R/UP FRANK'S WESTATES' CASING TOOLS. PICK UP MAKE UP SHOE, FLOAT JT, & FC. STAGE IN HOLE WITH 7", 29#, HCP-110, LT&C, CASING, B/CIRC PER 500', CIRC B/UP PER 1000'. TOTAL JTS OF 7" CASING RAN 102 CASING DEPTH AT 0600 HRS 4,114'.
6/28/2015	6:00 23:00	17.00	CASINT1	24		P	9,206.0	RUNNING 7" CASING. CIRCULATE BU AT 3782', 4383', 4883, 5434', 5988', 6573', 7079', 7604', 8036', 8495', 8880', 9200'. TOTAL OF 221 JTS OF 7" CASING RAN, SHOE @ 9200', FLOAT COLLAR @ 9157', MARKER JT @ 7249'.
	23:00 23:30	0.50	CASINT1	24		P	9,206.0	PU LANDING JOINT.
	23:30 1:30	2.00	CASINT1	15		P	9,206.0	CIRCULATE AND CONDITION MUD. RIG DOWN FRANKS, RIG UP HALLIBURTON.
	1:30 6:00	4.50	CASINT1	25		P	9,206.0	INSTALL HALLIBURTON CEMENT HEAD. P. TEST HEAD AND LINES TO 5,000 PSI. PUMPED 40 BBL. TUNED SPACER @10.0 PPG.9.97 YIELD, 66.1 GAL/SK WATER) PUMPED 351 BBLS OF LEAD CEMENT (850 SKS. , 12.0 PPG. 2.32 YIELD, 12.48 GAL/SK WATER) PUMPED 91 BBL OF TAIL CEMENT (310 SKS., 13.0 PPG, 1.64 YIELD, 8.20 GAL/SK WATER) DISPLACED WITH 340 BBLS. OF 10.0 PPG DRILLING MUD. NO CEMENT OR SPACER TO SURFACE FINAL CIRCULATING PRESSURE 1200 PSI. DID NOT BUMP PLUG.
6/29/2015	6:00 7:30	1.50	DRLPRD	42		P	9,206.0	LAY DOWN LANDING JOINT AND INSTALL PACKOFF. TEST 5,000 PSI / 10 MINUTES. OK.
	7:30 13:30	6.00	DRLPRD	19		P	9,206.0	PRESSURE TEST BOP RAMS, BOTH INSIDE AND OUTSIDE CHOKE AND KILL LINE VALVES, ALL LINES, VALVES ON TOP DRIVE, STABBING VALVE AND INSIDE BOP TO 250 LOW / 10,000 HIGH. ALL TESTS 10 MINUTES EACH. P. TEST ANNULAR 250 LOW / 4,000 HIGH FOR 10 MINUTES.
	13:30 14:00	0.50	DRLPRD	31		P	9,206.0	TEST CASING 2,500 PSI / 30 MINUTES. OK.
	14:00 16:00	2.00	DRLPRD	14		P	9,206.0	PICK UP BHA.
	16:00 1:00	9.00	DRLPRD	14		P	9,206.0	TRIP IN HOLE PICKING UP 4" DRILL PIPE.
	1:00 2:30	1.50	DRLPRD	72		P	9,206.0	DRILL SHOE TRACK & 10' OF NEW FORMATION.
	2:30 3:30	1.00	DRLPRD	33		P	9,216.0	CIRC B/UP & PERFORM FIT WITH 1930 PSI SURFACE PRESSURE 15.4 PPG EMW.
	3:30 6:00	2.50	DRLPRD	07		P	9,216.0	DRILL FROM 9216' TO 9421'.
6/30/2015	6:00 6:30	0.50	DRLPRD	07		P	9,421.0	DRILLING FROM 9421' TO 9497'.
	6:30 8:00	1.50	DRLPRD	11		P	9,497.0	CIRCULATE AND RUN WIRELINE SURVEY.
	8:00 16:00	8.00	DRLPRD	07		P	9,497.0	DRILLING FROM 9497' TO 10,160'.
	16:00 16:30	0.50	DRLPRD	12		P	10,160.0	RIG SERVICE.
	16:30 6:00	13.50	DRLPRD	07		P	10,160.0	DRILLING FROM 10,160' TO 11283'.
7/1/2015	6:00 13:30	7.50	DRLPRD	07		P	11,283.0	DRILLING FROM 11,283' TO 11836'
	13:30 15:00	1.50	DRLPRD	15		P	11,836.0	SIMULATE CONNECTION. CIRCULATE BU. BU GAS 851UNITS PASON 640 UNITS 3RD PARTY.
	15:00 17:30	2.50	DRLPRD	13		P	11,836.0	SHORT TRIP TO 7" CASING SHOE.
	17:30 20:30	3.00	DRLPRD	15		P	11,836.0	CIRCULATE AND CONDITION MUD. BU GAS 6975 PASON 3529 3RD PARTY, NO FLAIR, RAISE MW TO 12.6 PPG.
	20:30 2:00	5.50	DRLPRD	13		P	11,836.0	POOH. REMOVE ROTATING RUBBER.
	2:00 4:00	2.00	DRLPRD	14		P	11,836.0	LAY DOWN BHA.
	4:00 6:00	2.00	EVLPRD	22		P	11,836.0	RIG UP HALLIBURTON WIRE LINE & RUN ULTRA SLIM QUAD COMBO.
7/2/2015	6:00 10:30	4.50	EVLPRD	22		P	11,836.0	LOG WITH HALLIBURTON. LOGGER'S TD 11,829'
	10:30 15:30	5.00	CASPRD1	24		P	11,836.0	RIG UP FRANKS WESTATES AND RUN FS, 1 JOINT OF 5" 18# HCP-110 STL CASING, FC, 1 JOINT OF CASING, 60 JOINTS OF CASING, AND VERSAFLEX LINER HANGER.

2.1 Operation Summary (Continued)

Date	Time Start-End	Duratio n (hr)	Phase	Activit y	Sub	OP Code	MD from (ft)	Operation
7/3/2015	15:30 17:00	1.50	CASPRD1	42		P	11,836.0	INSTALL ROTATING HEAD, RIG DOWN CASING CREW, CIRCULATE LINER VOLUME AT 2.5 BBLS/MIN.
	17:00 5:30	12.50	CASPRD1	13		P	11,836.0	TIH WITH LINER. FILL PIPE EVERY 1000'. CIRC B/UP EVERY 2000' WITH FULL RETURNS ON EACH CIRCULATION. WASH FROM 11,402' TO 11,836'.
	5:30 6:00	0.50	CASPRD1	15		P	11,836.0	SPACED OUT & R/UP CEMENT HEAD.
	6:00 9:00	3.00	CASPRD1	15		P	11,836.0	CIRCULATE BU X2.
	9:00 12:00	3.00	CASPRD1	25		P	11,836.0	PJSM. RIG UP HALLIBURTON CEMENT HEAD. P. TEST TO 9,000 PSI. OK. CEMENT WITH 20 BBLS. (12.3 PPG 2.84 YIELD 17.8 GAL / SK WATER) TUNED SPACER. PRIMARY CEMENT(65 BBLS. 240 SKS. 14.2 PPG. 1.52 YIELD 6.58 GAL / SK WATER) DISPLACED WITH 60 BBLS ALDACIDE/CLAWEB 80.6 BBLS OF 12.0 PPG DRILLING MUD. PLUG DN AT 12:00PM. PRESSURE PRIOR TO BUMPING 2083 PSI, PRESSURED TO 2583. FLOATS HELD. FLOWED BACK 1-1/2 BBLS.
	12:00 14:30	2.50	CASPRD1	25		P	11,836.0	DROPPED BALL. RUPTURED DISC AT 5,350 PSI. PUMPED 60 BBLS. PRESSURED UP TO 5,720 PSI, EXPANDED PACKER HANGER. PULL TESTED LINER WITH 100K OVERPULL. SAT DOWN 60K, RELEASED SETTING TOOL FROM LINER HANGER. TOL AT 9027' WITH 173' OF LAP. MARKER JT TOPS AT 10,854' & 9837'. DISPLACED CEMENT FROM ABOVE LINER TOP. 20 BBLS OF TUNED SPACER PLUS 25 BBLS OF CEMENT RECOVERED. P. TESTED LINER TOP 1000 PSI / 10 MINUTES. OK. DISPLACED HOLE WITH ALDACIDE/CLAWEB.
	14:30 15:30	1.00	CASPRD1	42		P	11,836.0	RIG DOWN HALLIBURTON. LAY DOWN CEMENT HEAD.
	15:30 20:30	5.00	CASPRD1	14		P	11,836.0	LAY DOWN 4" DRILL PIPE.
	20:30 0:30	4.00	CASPRD1	14		P	11,836.0	TRIP IN HOLE WITH DRILL PIPE FROM DERRICK AND LAY DOWN SAME.
7/4/2015	0:30 6:00	5.50	CASPRD1	29		P	11,836.0	NIPPLE DOWN 11" 10M BOPE STACK.
	6:00 11:30	5.50	CASPRD1	29		P	11,836.0	ND 10K BOPE, PULL RENTAL RAMS FROM SINGLE AND DOUBLE BOP.
	11:30 13:30	2.00	CASPRD1	27		P	11,836.0	ND "B" SECTION. INSTALL TUBING SPOOL, FRAC VALVE, AND NIGHT CAP. PRESSURE TEST 5000 PSI / 10 MINUTES. OK. RIG RELEASED AT 13:30 7/3/2015.
	13:30 6:00	16.50	RDMO	02		P	11,836.0	RIGGING DOWN. RIG DOWN TOP DRIVE AND TORQUE TUBE. PULL LINERS FROM MUD PUMPS. PREPARE DERRICK FOR LOWERING. PREPARING RIG FOR STACK ACCORDING TO PATTERSON STACK PROCEDURE. 25% RIGGED DOWN.
7/5/2015	6:00 6:00	24.00	RDMO	02		P	11,836.0	LOWER DERRICK, UNSTRING. RIG DOWN. 50% RIGGED DOWN.
7/6/2015	6:00 6:00	24.00	RDMO	02		P	11,836.0	RIGGING DOWN. BREAK DOWN DERRICK AND LOAD OUT. UNSTACK SUBS AND TEAR DOWN. REMOVE STOMPERS FROM BOTTOM SUB HALVES. REMOVE SHAKERS FROM PITS. ALL TUBULARS, DERRICK, DRAWWORKS, GAS BUSTER, MANIFOLD SHACK, AND RENTAL EQUIPMENT OFF OF LOCATION. 95% RIGGED DOWN. 20% MOVED.
7/7/2015	6:00 6:00	24.00	RDMO	02		P	11,836.0	MOVE RIG TO STACK YARD IN FRUITA, COLORADO. 100% RIGGED DOWN 70% MOVED.
7/8/2015	6:00 6:00	24.00	RDMO	02		P	11,836.0	MOVE RIG TO STACK OUT YARD IN FRUITA, COLO. 3 LOADS OF RIG LEFT ON LOCATION. RD AND MOVE CAMP.

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CENTRAL DIVISION

ALTAMONT FIELD

CAHAL 4-15C4

CAHAL 4-15C4

COMPLETION LAND

Operation Summary Report

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1 General

1.1 Customer Information

Company	CENTRAL DIVISION
Representative	
Address	

1.2 Well Information

Well	CAHAL 4-15C4		
Project	ALTAMONT FIELD	Site	CAHAL 4-15C4
Rig Name/No.		Event	COMPLETION LAND
Start date	7/2/2015	End date	
Spud Date/Time	6/20/2015	UWI	CAHAL 4-15C4
Active datum	KB @5,997.6ft (above Mean Sea Level)		
Afe No./Description	161604/54262 / CAHAL 4-15C4		

2 Summary

2.1 Operation Summary

Date	Time Start-End	Duration (hr)	Phase	Activity	Sub	OP Code	MD from (ft)	Operation
7/15/2015	6:00 7:00	1.00	WOR	28		P		CREW TRAVEL TO LOCATION. HSM. WRITE AND REVIEW JSA. TOPIC - OVERHEAD LOADS.
	7:00 10:00	3.00	MIRU	01		P		RU PEAK 2300. MOVE IN PIPE RACKS, PIPE, FLOWBACK TANKS.
	10:00 11:00	1.00	WOR	36		P		ATTEMPT TO PRESSURE TEST BOPS TO 4,000 PSI. LOWER MASTER VALVE NOT HOLDING PRESSURE. OPEN LOWER MASTER VALVE AND PRESSURE TEST CASING AND BOPS TO 4,000 PSI FOR 5 MINS. GOOD TEST.
	11:00 17:30	6.50	WOR	39		P		MU 4 1/8" ROCK BIT, BIT SUB AND TIH PU 93 JTS 2 3/8" N-80 TBG, 2 3/8" TO 2 7/8" X OVER, 267 JTS 2 7/8" N-80 TBG. TAG FILL @ 11,686'.
7/16/2015	6:00 7:00	1.00	WOR	28		P		CREW TRAVEL TO LOCATION. WRITE AND REVIEW JSA. TOPIC-LINE OF FIRE.
	7:00 7:30	0.50	WOR	39		P		TAG FILL AT 11,686' (TBG MEASUREMENT). RU POWERSWIVEL.
	7:30 9:30	2.00	WOR	10		P		CLEAN OUT FILL TO 11,752' (TBG MEASUREMENT).
	9:30 10:30	1.00	WOR	06		P		CIRCULATE 400 BBLs TREATED 2% KCL WATER. RD POWERSWIVEL.
	10:30 16:00	5.50	WOR	16		P		POOH LAYING DOWN 269 JTS 2 7/8" TBG, 2 7/8" TO 2 3/8" X-OVER, 93 JTS 2 3/8" TBG, BIT SUB AND BIT.
	16:00 17:00	1.00	WOR	16		P		ND BOPS. MOVE TBG AND PIPE RACKS TO SIDE OF LOCATION. RIG DOWN WOR.
7/18/2015	6:00 7:30	1.50	WLWORK	28		P		CT HOLD SAFETY MTG ON RU WIRE LINE, WRITE & REVIEW JSA'S
	7:30 14:00	6.50	WLWORK	22		P		MIRU WIRE LINE RIH W/ GR/JB, CORRELATE TO LINER TOP, TAG AT 11742' POOH, RIH W/ CCL/CBL/GR CORRELATE TO HALLIBURTONS BORE HOLE COMPENSATED SONIC ARRAY LOG RUN 2 DATED 7/1/15 LOG FROM 11738' TO 1900', UNDER 4000 PSI, POOH, SHUT FRAC VALVE NU NIGHT CAP, RD WIRE LINE, SDFD
7/24/2015	6:00 7:30	1.50	WBP	28		P		TRAVEL TO LOCATION. HOLD SAFETY MEETING ON NIPPLING UP FRAC STACK. FILL OUT & REVIEW JSA

2.1 Operation Summary (Continued)

Date	Time Start-End	Duratio n (hr)	Phase	Activit y	Sub	OP Code	MD from (ft)	Operation
7/25/2015	7:30 12:00	4.50	WBP	16		P		ND FRAC VALVE. NU REBUILT FRAC VALVE. PRESSURE TEST & CHART FRAC VALVE & CSG TO 9000 PSI. NU FRAC STACK & RUN FLOW BACK LINES. PRESSURE TEST FLOW BACK LINES TO 5000 PSI. TESTED GOOD. PRESSURE TEST & CHART FRACK STACK TO 10000 PSI.
	12:00 6:00	18.00	WBP	18		P		CONTINUE MOVING IN FRAC WTR
	6:00 7:30	1.50	STG01	28		P		TRAVEL TO LOCATION. HOLD SAFETY MEETING ON WIRE LINE SAFETY. FILL OUT & REVIEW JSA
	7:30 10:00	2.50	STG01	21		P		RU WIRE LINE UNIT. RIH & PERFORATE STAGE 1 PERFORATIONS 11399' TO 11705' USING 2-3/4" TITAN PERFECTA SDP, 16 GRAM CHARGES, 3 JSPF & 120 DEGREE PHASING. CSG PRESSURE DROPPED FROM 1000 PSI TO 900 PSI WHILE PERFORATING.
	10:00 12:00	2.00	STG01	18		P		TREAT & TRANSFER FRAC WTR.
	12:00 18:00	6.00	STG01	18		P		REFILL STAGING AREA
7/26/2015	6:00 18:00	12.00	STG01	18		P		HEAT FRAC LINE
7/27/2015	6:00 18:00	12.00	STG01	18		P		MIRU FRAC EQUIPMENT. HEAT STAGING AREA
7/28/2015	6:00 7:00	1.00	STG01	28		P		HOLD SAFETY MEETING ON FRAC SAFETY. REVIEW JSA'S.
	7:00 8:30	1.50	STG01	48		N		REPAIR PACKING ON TOP HCR VALVE
	8:30 10:00	1.50	STG01	35		P		OPENED UP WELL W/ 327 PSI. BREAK DOWN STAGE # 1 PERFS @ 5431 PSI, 9.7 BPM. EST INJ RATE 47 BPM, 6400 PSI. STEP RATE TEST 37 OPEN PERFS. I.S.I.P. 4525 PSI. F.G. .825, 5 MIN 4461 PSI, 10 MIN 4429 PSI. TREATED PERFS W/ 5000 GALS 15% HCL ACID. PUMPED 3050 LBS 100 MESH IN 1/2 PPG STAGE AND 150150 LBS THS 30/50. IN .5#, 1#, 2# AND 3# STAGES. AVG RATE 75.1 BPM, MAX RATE 75.4 BPM. AVG PRESS 5287, MAX PRESS 7993. I.S.D.P. 4723 PSI. F.G. .842. SHUT WELL IN 3950 BBLS TO RECOVER. TURNED WELL OVER TO WIRELINE
	10:00 12:00	2.00	STG02	21		P		RIH & SET BAKER 10K CBP @ 11347' PERFORATE STAGE 2 PERFORATIONS 11038" TO 11332' USING 2-3/4" TITAN PERFECTA SDP, 16 GRAM CHARGES, 3 JSPF & 120 DEGREE PHASING. CSG PRESSURE DROPPED FROM 4700 PSI TO 4600 PSI WHILE PERFORATING. TURN WELL OVER TO FRAC CREW
	12:00 14:00	2.00	STG02	35		P		CSG PRESSURE 4527 PSI. BREAK DOWN STAGE # 2 PERFS @ 6329 PSI, 6.5 BPM. EST INJ RATE & STEP RATE TEST 24 OPEN PERFS. I.S.I.P. 4475 PSI. F.G. .833, 5 MIN 4428 PSI, 10 MIN 4421 PSI. TREATED PERFS W/ 5000 GALS 15% HCL ACID. PUMPED 3000 LBS 100 MESH IN 1/2 PPG STAGE AND 149220 LBS THS 30/50. IN .5#, 1#, 2# AND 3# STAGES. AVG RATE 75.2 BPM, MAX RATE 75.5 BPM. AVG PRESS 5224, MAX PRESS 7675. I.S.D.P. 4699 PSI. F.G. .853. SHUT WELL IN 3907 BBLS TO RECOVER. TURNED WELL OVER TO WIRELINE
	14:00 15:30	1.50	STG03	21		P		RIH & SET BAKER 10K CBP @ 10992' PERFORATE STAGE 3 PERFORATIONS 10691' TO 10977' USING 2-3/4" TITAN PERFECTA SDP, 16 GRAM CHARGES, 3 JSPF & 120 DEGREE PHASING. CSG PRESSURE DROPPED FROM 4600 PSI TO 4500 PSI WHILE PERFORATING. TURN WELL OVER TO FRAC CREW
	15:30 17:00	1.50	STG03	35		P		CSG PRESSURE 4559 PSI. BREAK DOWN STAGE # 3 PERFS @ 4559 PSI, 9.6 BPM. EST INJ RATE & STEP RATE TEST 30 OPEN PERFS. I.S.I.P. 4633 PSI. F.G. .861, 5 MIN 4588 PSI, 10 MIN 4576 PSI. TREATED PERFS W/ 5000 GALS 15% HCL ACID. PUMPED 3050 LBS 100 MESH IN 1/2 PPG STAGE AND 15000 LBS TLC 30/50. IN .5#, 1#, 2# AND 3# STAGES. AVG RATE 75.3 BPM, MAX RATE 76.3 BPM. AVG PRESS 5224, MAX PRESS 7675. I.S.D.P. 4667 PSI. F.G. .864. SHUT WELL IN 3901 BBLS TO RECOVER. TURNED WELL OVER TO WIRELINE

2.1 Operation Summary (Continued)

Date	Time Start-End	Duration (hr)	Phase	Activity	Sub	OP Code	MD from (ft)	Operation
	17:00 19:00	2.00	STG04	21		P		RIH & SET BAKER 10K CBP @ 10667' PERFORATE STAGE 4 PERFORATIONS 10403' TO 10667' USING 2-3/4" TITAN PERFECTA SDP, 16 GRAM CHARGES, 3 JSPF & 120 DEGREE PHASING. CSG PRESSURE DROPPED FROM 4600 PSI TO 4500 PSI WHILE PERFORATING. SHUT WELL IN FOR NIGHT
7/29/2015	6:00 7:15	1.25	STG04	42		N		HOLD SAFETY MEETING ON FRAC SAFETY. REVIEW JSA. WAIT ON 2 PUMPS TO BE REPAIRED.
	7:15 9:00	1.75	STG04	35		P		CSG PRESSURE 4698 PSI. BREAK DOWN STAGE # 4 PERFS @ 5913 PSI, 9.8 BPM. EST INJ RATE & STEP RATE TEST 38 OPEN PERFS. I.S.I.P. 4583 PSI. F.G. .868, 5 MIN 4500 PSI, 10 MIN 4452 PSI. TREATED PERFS W/ 5000 GALS 15% HCL ACID. PUMPED 3050 LBS 100 MESH IN 1/2 PPG STAGE AND 15000 LBS TLC 30/50. IN .5#, 1#, 2# AND 3# STAGES. AVG RATE 75 BPM, MAX RATE 75.3 BPM. AVG PRESS 5215, MAX PRESS 7821. I.S.D.P. 4790 PSI. F.G. .888. SHUT WELL IN 3936 BBLS TO RECOVER. TURNED WELL OVER TO WIRELINE. NOTE: WAS UNABLE TO PULL ACID OFF OF TRANSPORT AT NORMAL RATE. PUMPED MAGORITY OF ACID @ 10 BPM OR LOWER. ACID WAS MIXED AT A LOWER PERCENTAGE, USING 112 BBLS EXTRA TO MIX ACID.
	9:00 10:30	1.50	STG05	21		P		RIH & SET BAKER 10K CBP @ 11347' PERFORATE STAGE 5 PERFORATIONS 10133' TO 10361' USING 2-3/4" TITAN PERFECTA SDP, 16 GRAM CHARGES, 3 JSPF & 120 DEGREE PHASING. CSG PRESSURE DROPPED FROM 4600 PSI TO 4100 PSI WHILE PERFORATING. TURN WELL OVER TO FRAC CREW
	10:30 12:00	1.50	STG05	35		P		CSG PRESSURE 3504 PSI. BREAK DOWN STAGE # 5 PERFS @ 5500 PSI, 9.8 BPM. EST INJ RATE & STEP RATE TEST 34 OPEN PERFS. I.S.I.P. 4239 PSI. F.G. .847, 5 MIN 4139 PSI, 10 MIN 4110 PSI. TREATED PERFS W/ 5000 GALS 15% HCL ACID. PUMPED 3000 LBS 100 MESH IN 1/2 PPG STAGE AND 151,300 LBS TLC 30/50. IN .5#, 1#, 2# AND 3# STAGES. AVG RATE 75.1 BPM, MAX RATE 75.42 BPM. AVG PRESS 5011, MAX PRESS 6708. I.S.D.P. 4239 PSI. F.G. .885. SHUT WELL IN 3843 BBLS TO RECOVER. TURNED WELL OVER TO WIRELINE.
	12:00 13:30	1.50	STG06	21		P		RIH & SET BAKER 10K CBP @ 10117' PERFORATE STAGE 6 PERFORATIONS 9912' TO 10102' USING 2-3/4" TITAN PERFECTA SDP, 16 GRAM CHARGES, 3 JSPF & 120 DEGREE PHASING. CSG PRESSURE DROPPED FROM 4200 PSI TO 3800 PSI WHILE PERFORATING. TURN WELL OVER TO FRAC CREW
	13:30 15:00	1.50	STG06	35		P		CSG PRESSURE 3504 PSI. BREAK DOWN STAGE # 6 PERFS @ 5578 PSI, 9.9 BPM. EST INJ RATE & STEP RATE TEST 22 OPEN PERFS. I.S.I.P. 3796 PSI. F.G. .812, 5 MIN 3315 PSI, 10 MIN 3241 PSI. TREATED PERFS W/ 5000 GALS 15% HCL ACID. PUMPED 3000 LBS 100 MESH IN 1/2 PPG STAGE AND 150,400 LBS TLC 30/50. IN .5#, 1#, 2# AND 3# STAGES. AVG RATE 73.9 BPM, MAX RATE 75.5 BPM. AVG PRESS 4815, MAX PRESS 6405. I.S.D.P. 4197 PSI. F.G. .852. SHUT WELL IN 3826 BBLS TO RECOVER. TURNED WELL OVER TO WIRELINE.
	15:00 16:30	1.50	STG07	21		P		RIH & SET BAKER 10K CBP @ 9882' PERFORATE STAGE 7 PERFORATIONS 9640' TO 9867' USING 2-3/4" TITAN PERFECTA SDP, 16 GRAM CHARGES, 3 JSPF & 120 DEGREE PHASING. CSG PRESSURE DROPPED FROM 3800' PSI TO 3400 PSI WHILE PERFORATING. TURN WELL OVER TO FRAC CREW

2.1 Operation Summary (Continued)

Date	Time Start-End	Duration (hr)	Phase	Activity	Sub	OP Code	MD from (ft)	Operation
	16:30 18:30	2.00	STG07	35		P		CSG PRESSURE 3320 PSI. BREAK DOWN STAGE # 7 PERFS @ 5937 PSI, 20.8 BPM. EST INJ RATE & STEP RATE TEST 21 OPEN PERFS. I.S.I.P. 3824 PSI. F.G. .825, 5 MIN 3588 PSI, 10 MIN 3442 PSI. TREATED PERFS W/ 5000 GALS 15% HCL ACID. PUMPED 3000 LBS 100 MESH IN 1/2 PPG STAGE AND 149,200 LBS TLC 30/50. IN .5#, 1#, 2# AND 3# STAGES. AVG RATE 75.2 BPM, MAX RATE 75.43 BPM. AVG PRESS 4574, MAX PRESS 7780. I.S.D.P. 4316 PSI. F.G. .876. SHUT WELL IN 3901 BBLS TO RECOVER. TURNED WELL OVER TO WIRELINE.
	18:30 20:00	1.50	STG08	21		P		RIH & SET BAKER 10K CBP @ 9610' PERFORATE STAGE 8 PERFORATIONS 9334' TO 9595' USING 2-3/4" TITAN PERFECTA SDP, 16 GRAM CHARGES, 3 JSPF & 120 DEGREE PHASING. CSG PRESSURE DROPPED FROM 3800' PSI TO 3400 PSI WHILE PERFORATING. TURN WELL OVER TO FRAC CREW
	20:00 1:00	5.00	STG08	35		P		CSG PRESSURE 3320 PSI. ATTEMPT TO BREAK DOWN STAGE # 8 PERFS. PRESSURED UP TO 9000 PSI. DID NOT SEE BREAK. 2 MORE ATTEMPTS TO BREAK DOWN PERFS FAILED. RU WIRELINE UNIT. RIH W/ DUMP BAILER & 7 GALLONS 28% HCL ACID. SET DOWN @ 9366'. WORK BAILER TO 9494'. COULD NOT WORK DEEPER. DUMP ACID & POOH W/ BAILER. BREAK DOWN STAGE 8 PERFORATIONS @ 3950 PSI, 4.5 BPM. EST INJ RATE & STEP RATE TEST 21 OPEN PERFS. I.S.I.P. 3970 PSI. F.G. .852, 5 MIN 3375 PSI, 10 MIN 3216 PSI. TREATED PERFS W/ 5000 GALS 15% HCL ACID. PUMPED 3000 LBS 100 MESH IN 1/2 PPG STAGE AND 28670 LBS TLC 30/50. IN .5#, & 1#, STAGES. PRESSURE TURNED AS 1 PPG FLUID HIT PERFS. STAGED TO FLUSH @ THIS POINT & WAS UNABLE TO FULLY FLUSH. SHUT DOWN LEAVING 106 SX SAND IN WELLBORE. ESTIMATED TOP OF SAND 824' ABOVE BOTTOM PERF OR 8771'. AVG RATE 75 BPM, MAX RATE 75.09 BPM. AVG PRESS 5163, MAX PRESS 9488. I.S.D.P. 3970 PSI. 3901 BBLS TO RECOVER.
	1:00 6:00	5.00	FB	19		P		OPEN WELL ON A 12/64" CHOKE @ 2500 PSI. FLOW WELL TO FLOW BACK TANK. RECOVERED
7/30/2015	6:00 9:00	3.00	STG08	19		P		FLOW WELL TO FLOW BACK TANK.
	9:00 12:00	3.00	STG08	18		P		RU WIRE LINE UNIT. RIH W/ 2-3/4" OD JUNK BASKET / GUAGE RING & TAGG SAND @ 9577'. POOH & RD WIRELINE UNIT
	12:00 6:00	18.00	STG08	19		P		CONTINUE FLOWING WELL TO FLOW BACK TANK ON A 12/64" CHOKE. RECOVERED 407 TTL BBLS FLUID. CSG PRESSURE @ REPORT TIME 1300 PSI W/ WELL MAKING MOSTLY OIL @ A 10 TO 20 BBL PER HR RATE
7/31/2015	6:00 6:30	0.50	STG08	28		P		HOLD SAFETY MEETING ON FRAC SAFETY. FILL OUT & REVIEW JSA
	6:30 10:00	3.50	STG08	18		P		MIX ACID & PREP EQUIPMENT FOR ACID JOB
	10:00 12:30	2.50	STG08	42		N		WAIT ON BIO BALLS TO ARRIVE
	12:30 13:30	1.00	STG08	35		P		PRESSURE TEST LINES. OPEN WELL. 2 HR SICP 2100PSI. MADE 4 ATTEMPTS TO ESTABLISH INJECTION RATE. PRESSURED UP TO 9000 PSI EACH TIME
	13:30 16:30	3.00	STG08	42		P		ORDER & WAIT ON BRAIDED LINE TRUCK TO ARRIVE ON LOCATION
	16:30 21:00	4.50	STG08	18		P		RU BRAIDED LINE UNIT. RIH W/ CHISEL POINT BAILER ASSEMBLY. TAGGED SAND @ 9396'. BAIL SAND TO 9415'. LOST STROKE ON BAILER. POOH. EMPTY SAND FROM BAILER. RIH & TAG SAND @ 9335'. POOH ABOVE LINER. OPEN WELL ON A 28/64" CHOKE. RIH W/ BAILER & TAG @ 9645'. POOH & RD BRAIDED LINE UNIT
	21:00 6:00	9.00	STG08	19		P		FLOW WELL TO FLOW BACK TANK ON A 12/64" CHOKE

8/1/2015

2.1 Operation Summary (Continued)

Date	Time Start-End	Duratio n (hr)	Phase	Activit y	Sub	OP Code	MD from (ft)	Operation
	6:00 7:00	1.00	STG08	28		P		TRAVEL TO LOCATION. HOLD SAFETY MEETING ON PUMPING ACID. FILL OUT & REVIEW JSA
	7:00 11:00	4.00	STG08	35		P		ATTEMPT TO BREAK DOWN STAGE 8. PUMP 84.5 BBLS FLUID. PRESSURED UP TO 9000 PSI. BLEED PRESSURE BACK & ATTEMPT TO BREAK DOWN PERFS A TOTAL OF 6 TIMES WITH SAME RESULTS.
	11:00 13:30	2.50	STG08	16		P		RU COIL TBG EQUIPMENT
	13:30 15:30	2.00	STG08	42		N		WAIT ON MOTORASSEMBLY TO ARRIVE ON LOCATION
	15:30 0:00	8.50	STG08	10		P		RIH & CLEAN OUT TO CBP SET @ 9610' CIRCULATE WELL CLEAN.
	0:00 2:00	2.00	STG08	42		N		WAIT ON APPROVAL FROM CTS TO SPOT ACID THROUGH COIL TBG.
	2:00 2:30	0.50	STG08	06		P		SPOT 5 BBLS ACID ACROSS PERFS.
	2:30 5:48	3.30	STG08	10		P		POOH W/ COIL TBG. RD COIL TBG UNIT
8/2/2015	6:00 6:30	0.50	STG08	28		P		HOLD SAFETY MEETING ON FRAC SAFETY. FILL OUT & REVIEW JSA
	6:30 9:00	2.50	STG08	35		P		TREAT STAGE 8 PERFORATIONS W/ 50,000 GALLONS 15% HCL ACID IN 3 STAGESDROPPING 120 BIO BALL SEALERS IN 2 SPACER STAGES & FLUSHING TO BOTTOM PERF + 10 BBLS. ISIP 3746 PSI. FG .829. AVG RATE 32.3 BPM. AVG PSI 4487 PSI. MAX RATE 55.1 BPM. MAX PSI 5528 PSI. RD FRAC EQUIPMENT
	9:00 10:30	1.50	CTU	01		P		MIRU COIL TBG EQUIPMENT.
	10:30 13:30	3.00	CTU	54		N		REPAIR HYDRAULIC HOSE ON CRANE
	13:30 15:30	2.00	CTU	01		P		FINISH RIGGING UP CT EQUIPMENT. MU MOTOR ASSEMBLY
	15:30 4:00	12.50	CTU	10		P		RIH & DRILL CBP'S. CLEAN OUT TO PBDT @ 11752'. CIRCULATE 1 HR ON BOTTOM & 1 HR @ LINER TOP POOH & RD COIL TBG UNIT
	4:00 6:00	2.00	FB	19		P		OPEN WELL TO FLOW BACK TANK. 3245 PSI ON A 12/64" CHOKE
8/3/2015	6:00 6:30	0.50	FB	28		P		HOLD SAFETY MEETING ON FLOW BACK OPERATIONS. FILL OUT & REVIEW JSA
	6:30 6:00	23.50	FB	19		P		FLOW WELL TO FLOW BACK TANK. RECOVERED 1207 BBLS FLUID, FLOWING @ 2425 PSI ON A 12/64" CHOKE
8/4/2015	6:00 7:30	1.50	WOR	28		P		TRAVEL TO LOCATION. HOLD SAFETY MEETING ON WIRELINE SAFETY. FILL OUT & REVIEW JSA
	7:30 10:00	2.50	WOR	27		P		RU WIRELINE UNIT. RIH & SET PKR @ 9116' WLM. POOH W/ SETTING TOOL. RD WIRELINE UNIT
	10:00 11:00	1.00	WOR	16		P		ND FRAC STACK. NU BOP. TEST BOP TO 4000 PSI FOR 5 MINUTES.
	11:00 12:00	1.00	WOR	01		P		RIG UP WORKOVER RIG
	12:00 18:30	6.50	WOR	39		P		TIH W/ ON/OFF SKIRT, 5 JTS 2-3/8"EUE TBG, X-OVER & 276 JTS 2-7/8"EUE TBG. TAG & LATCH ONTO PKR. MEASURE SPACEOUT. LD 4 JTS 2-7/8"EUE TBG. SDFN
8/5/2015	6:00 7:30	1.50	WOR	28		P		TRAVEL TO LOCATION. HOLD SAFETY MEETING ON LANDING TBG. FILL OUT & REVIEW JSA
	7:30 10:30	3.00	WOR	06		P		TIH W/ 2 JTS TBG, 6' X 2-7/8"EUE PUP JT & 1 JT 2-7/8"EUE TBG. CIRCULATE WELL W/ 380 BBLS PKR FLUID.
	10:30 13:00	2.50	WOR	16		P		ENGAGE PKR. LAND TBG ON BREECHLOCK TBG HANGER IN 15K TENSION. INSTALL 2 WAY CHECK VALVE IN TBG HANGER. ND BOP. NU WELLHEAD. PRESSURE TEST FAILED.
	13:00 15:30	2.50	WHDTRE	47		N		ND WELL HEAD. TBG HANGER ADAPTER SEAL ASSEMBLY WAS TO SHORT FOR WELLHEAD. WAIT ON WELL HEAD TO ARRIVE ON LOCATION. NU & TEST WELL HEAD. WELL HEAD TESTED GOOD.
	15:30 16:00	0.50	WOR	18		P		PUMP OUT PLUG @ 3800 PSI. OPEN WELL TO FLOW BACK TANK ON A 14/64" CHOKE @ 2500 PSI.

2.1 Operation Summary (Continued)

Date	Time Start-End	Duration (hr)	Phase	Activity	Sub	OP Code	MD from (ft)	Operation
	16:00 17:30	1.50	RDMO	02		P		RD RIG & MOVE TO THE MEEKS 2-32A4
	17:30 6:00	12.50	FB	19		P		OPEN WELL @ 16:30. RECOVERED 0 MCF GAS, 259 BBLS OIL (170 BBLS TRANSFERED FROM FLOW BACK TANKS) & 590 BBLS WTR, FLOWING @ 2475PSI ON A 14/64" CHOKE

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